THE
ECONOMIC HISTORY
REVIEW

Second Series, Vol. XIII, No. 2 1960

THE CLOTH INDUSTRY UNDER THE ROMAN EMPIRE

by A. H. M. JONES

We possess lamentably little information about the weaving and clothing industry of the Roman empire. It is only in Egypt that we have any intimate knowledge of weavers, what kind of men they were and how they were organized. Here the information of the papyri,[1] scattered and scrappy though it is, extends from the annexation of the province in 30 B.C. to the Arab conquest in A.D. 641. For the rest of the empire we have to be content with casual literary allusions and a rather meagre crop of inscriptions.[2] For one moment the Edict on prices issued by Diocletian in 301[3] gives us a remarkably full and detailed schedule of the prices both of the raw materials, wool and linen yarn, and of a large range of garments, and also of the wages of weavers and other workers. The general scale of prices was arbitrary, but there is no reason to believe that the relation of one price to another was distorted. It may seem rash to attempt an analysis of the industry on this slender basis. Conditions in Egypt may have been different from those in the rest of the empire, and many changes may have taken place in six centuries. But the evidence on the whole suggests that the organization of the industry was basically similar throughout the empire and that it developed little if at all throughout its history. It is on these assumptions that I base my reconstruction.

---

[1] The following standard abbreviations are used for collections of papyri:
BGU = *Aegyptische Urkunden aus den staatlichen Museen zu Berlin: Griechische Urkunden*
Chr. = *Grundzüge und Chrestomathie der Papyruskunde*
P. Cairo Masp. = *Catalogue général des antiquités égyptiennes du Musée du Caire; papyrus grecs d'époque byzantine*
P. Grenf. = *New classical fragments and other Greek and Latin papyri*
P. Lips. = *Griechische Urkunden der Papyrussammlung zu Leipzig*
P. Lond. = *Greek Papyri in the British Museum*
P. Mich. = *Papyri in the University of Michigan Collection*
P. Michael. = *Papyri Michaelidae*
P. Oxy. = *The Oxyrhynchus Papyri*
P. Phil. = *Papyrus de Philadelphie*
P. Ryl. = *Catalogue of the Greek papyri in the John Rylands Library, Manchester*
PSI = *Papiri greci e latini (Pubblicazioni della Società Italiana)*
P. Tebt. = *The Tebtunis Papyri*
SB = *Sammelbuch Griechischer Urkunden aus Aegypten*
SPP = *Studien zur Palaeographie und Papyruskunde*

[2] The following standard abbreviations are used for collections of inscriptions:
CIL = *Corpus Inscriptionum Latinarum*
IG = *Inscriptiones Graecae*
IGR = *Inscriptiones Graecae ad res Romanas pertinentes*
ILA = *Inscriptions Latines d'Afrique*
ILS = *Inscriptiones Latinae Selectae*
MAMA = *Monumenta Asiae Minoris Antiqua*
SEG = *Supplementum Epigraphicum Graecum*

[3] The best text (with translation) of the Edict of Diocletian is in Tenney Frank, *An Economic Survey of Ancient Rome*, vol. V (Baltimore, 1940).

Lanificium was one of the standard virtues of the Roman matron,[1] and Augustus, to set a good example, made his wife, daughter and grand-daughter occupy themselves in weaving wool, and even went so far as to wear their products himself.[2] But this attempt to revive the good old days was not successful, and Columella, writing under Nero, complains that in his time ladies would not be bothered with weaving and bought expensive clothes instead.[3] Some domestic production of clothes went on in rich households: the *columbarium* of the Statilii Tauri records four weavers among the slaves of their town house (as well as eight spinners, two dyers and four fullers),[4] and in the Digest there are references to slave *lanificae* on rural estates, who made clothes for the *familia rustica*.[5] But such work was on a small scale: Columella advises that the *vilica* should make the slave women work on rainy days, so as to produce clothes for the *actores* and superior slaves[6] – the clothing of the ordinary workers was evidently bought. Domestic weaving in upper class households continued into the sixth century. Pope Pelagius I (555–60) instructed one of his agents, in picking slaves from an estate part of which had been bequeathed to the church, to choose agricultural workers rather than domestic servants or men who could be useful in weaving ('viros qui forte gynaecaeo utiles esse possunt').[7]

Such household weaving, however, can have been of little economic importance. How far the poor wove their own clothes we do not know, but the majority seem to have bought their garments. Village weavers are frequently mentioned in Egypt, and the Edict of Diocletian sets prices for a wide range of inferior garments 'for the use of common people and slaves'.[8] An anecdote recounted by Augustine (bishop of Hippo from 395 to 430) is revealing.[9] Florentius, a poor man of Hippo, lost his *casula*. He had no money to buy another, but having prayed to the Twenty Martyrs found a large fish, which he sold for 300 *folles*. This was not enough for a *casula*, which would have cost 1000, but he bought some wool, 'so that his wife might, as best she could, make up something for him to wear'. Even a poor man normally bought ready-made clothes.

Weaving was then in the main a professional occupation, and clothing an object of trade. How far was manufacture concentrated in certain districts or towns? The Edict of Diocletian suggests that, for certain classes of garment at any rate, it was. It fixes special prices, for instance, for woollen garments styled British, Gallic, African, Norican, Raetic, Dardanian, Achaean, Phrygian,

---

[1] *ILS* 8402, 8403, 8393, line 30.

[2] Suetonius, *Augustus*, 64, 73.

[3] Columella, *de Re Rustica*, XII, *praef.* 9–10.

[4] *CIL* VI. 6213–6640; in *SB* 7358 an Egyptian woman in the late third century indentures herself to perform for her creditor 'weaving at which she is skilled and domestic work' (ἅπερ ἐπίσταται γερδιακά τε ἔργα καὶ οἰκιακά).

[5] *Digest*, XXXIII. vii. 12 § 6, 16 § 2, L. xvi. 203.

[6] Columella, *de Re Rustica*, XII. iii. 6.

[7] Pelagius I, *frag.* P. Jaffé, *Regesta Pontificum Romanorum*^{2}, I. 956 (656).

[8] *Ed. Diocl.* xxvi. 10, 31, 69, 75, 96, 117, 138, xxvii. 5, 26, xxviii. 4, 13, 34, 43, 53, 56, 63, εἰς χρῆσιν τῶν ἰδιωτῶν ἤτοι φαμιλιαρικῶν.

[9] Augustine, *de civitate Dei*, XXII. viii. 9. That a *casula* cost 1000 *folles* is inferred from the youths' taunt: 'quasi a martyribus quinquagenos folles unde vestimentum emeret petivisset'. If each of the Twenty Martyrs subscribed 50 *folles*, Florentius would have got 1000.

Pontic, Cappadocian, Arabian and Egyptian, and for others named after particular towns, those of the Nervii, Treviri, Ambiani and Bituriges in Gaul, Mutina and Canusium in Italy, Poetovio, Argos, Laodicea of Phrygia and Damascus.[1] Among linen garments it specifies those of Tarsus, Laodicea, Byblos, Scythopolis and Alexandria, and mattresses and pillows from Tralles, Antinoopolis, Damascus and Cyprus.[2] These are not mere trade names, for the Edict distinguishes a Modenese *chlamys* (χλαμὺς Μουτουνησία) from a Laodicene Modenese *chlamys* (χλαμὺς Λαδικηνὴ Μουτονυησία),[3] and a Nervian *birrus* (βίρρος Νερβικός) from a Laodicene *birrus* in imitation of a Nervian (βίρρος Λαδικηνὸς ἐν ὁμοιότητι Νερβικοῦ),[4] and Tarsian (Ταρσικά) from Tarsian Alexandrian linens (Ταρσικὰ ’Αλεξανδρινά),[5] and in the price lists of linen clothes distinguishes the better makes produced at named towns from those which are inferior but are made in more places.[6] Moreover some of the towns are otherwise known as important centres of the industry, Tarsus from Dio Chrysostom,[7] Scythopolis from the Theodosian Code,[8] and Alexandria from the Historia Augusta,[9] Canusium and Augusta Trevirorum from the Notitia Dignitatum.[10]

The makes of garments named after particular towns are highly priced and presumably of special excellence. This emerges most clearly from the lists of linen garments, which are very systematically arranged.[11] The towns are placed in order of merit: Scythopolis, Tarsus, Byblos, Laodicea, and Alexandria, and the products of each town are graded in three *formae*. Thus for instance tunics (στίχαι) range from first grade Scythopolitan at 7000 denarii to third grade Alexandrian at 2000. Below these come military tunics at 1500, 1250 and 1000 and below these again tunics of rough linen for the use of common people and slaves at half these prices. Men's dalmatics similarly range from 10,000 denarii for Scythopolitan grade 1 to 2000 for Alexandrian grade 3. Below these come those 'which are inferior to the above mentioned grade 3 but are made in more places' at 2500, 2000 and 1500, and below these again those for commoners and slaves at 800, 600 and 500. Thus middle-grade garments of sound quality, such as were required for the army, were produced in many places, and cheap clothes for the poor presumably at even more. The great weaving centres produced in the main luxury garments, the best of which cost 20 times as much as those made for the poorest classes, and the cheapest of which were often dearer than the middle-grade garments suitable for the army.

The list of woollen garments is less full, less systematic and less well preserved, but there is a marked contrast between the high prices fixed for the products of certain towns and areas, and those of other areas. Thus a Nervian *birrus* cost probably over 10,000 denarii, a Laodicene imitation of a Nervian 10,000, a Norican 8,000, a British or Argolic 6,000, a Laodicene or Canusian 4,000, an

---

[1] *Ed. Diocl.* xix; cf. also xx. 3, 4, 13, xxii. 16–26.

[2] *Ed. Diocl.* xxvi, xxvii, xxviii.

[3] *Ed. Diocl.* xx. 3, 4.

[4] *Ed. Diocl.* xix, 26, 27.

[5] *Ed. Diocl.* xxvi, 13–27, 34–63 etc. That these were fabrics of Tarsian type made at Alexandria is shown by the frequent mention of Ταρσικάριοι in Egyptian papyri (see Preisigke, *Worterbuch*, s.v.).

[6] *Ed. Diocl.* xxvi. 65.

[7] Dio Chrys. *Or.* XXXIV. 21–3.

[8] *Cod. Theod.* X. xx. 8.

[9] Scriptores Historiae Augustae, *Saturninus*, 8.

[10] *Not. Dig. Occ.* xi. 52, 58.

[11] *Ed. Diocl.* xxvi, xxvii, xxviii.

Achaean or Phrygian 2,000 and an African only 1,500.[1] A Gallic *sagum* from Ambiani or Bituriges was priced at 8,000 denarii, an African at 500.[2]

The location of the great weaving towns seems to have mainly been determined by the proximity of raw material of high quality. Thus Canusium drew upon the fine wool of Apulia,[3] the *civitates Nerviorum* and *Ambianorum* on Atrebatic,[4] Laodicea on Phrygian.[5] Wool from such favoured districts is very highly priced in the Edict, Atrebatic at 200 denarii per lb., Tarentine (i.e. Apulian) at 175, Laodicene at 150 as against 'best middle wool' at 50 and 'other wool' at 25.[6] But such high-grade wools were no doubt also exported to more distant weaving centres: the very fact that they are priced in the Edict suggests that they commanded a wide market, and indeed at such high prices they would have repaid the heavy costs of transport. The rate fixed by Diocletian for camels, which carried 600 lb., was 8 denarii per mile, and for donkeys, which presumably carried half that load, 4 denarii:[7] a bale of wool priced at 150 denarii the pound could therefore be carried 100 miles for less than 1 per cent of its value. One quite high-grade wool, the Asturian (priced at 100 denarii per lb.), must have been exported, for no fine garments are known to have been produced in Spain.

Linen yarn is also steeply graded in price, the best at 1200, 960 and 840 denarii per lb., the middling at 720, 600 and 450, and rough yarn for the use of commoners and slaves at 250, 125 and 72.[8] Linen yarn is not distinguished by its place of origin, but Egypt is known from other sources to have produced good flax,[9] and this explains the prominence of Alexandria as a weaving town.

The famous weaving towns, then, which produced high class garments from high quality material catered only for the rich; their products, since they were highly priced rarities, no doubt travelled far and commanded a widely-spread market. Were there any towns or districts which specialized in medium priced or cheap clothes for middle classes or the poor? There is very little evidence on this point. We are told that when the noble senator Pinianus took up the ascetic life at Rome at the end of the fourth century, he bought some very cheap clothes, called 'self-coloured Antiochenes'.[10] This suggests that cheap garments were produced for the Roman market in Syria. African woollens, which were notably cheaper than most others, may also have supplied the populace of Rome. But this is a mere conjecture.

A few very large towns, which like Rome had no local weaving industry, may have provided a market for cheap clothes produced elsewhere, but in general it is clear that medium priced and cheap clothing was produced locally, and that the industry was very widely dispersed. For Egypt the evidence of the Diocletianic Edict is confirmed by the papyri, which record weavers in many small towns and villages. It is also confirmed by the system of compulsory purchase whereby the Roman army supplied its needs. We possess a receipt dated A.D. 128 for 19 tunics and 5 cloaks (the latter for the army of Judaea) delivered by the wool weavers of the village of Socnupaei Nesos,[1] and an order dated A.D. 138 for payment in advance to the wool weavers of the village of Philadelphia for one chiton and four cloaks for the army of Cappadocia, and one blanket for the military hospital of Sebaste.[2] From the late third century we have an order for 100 tunics from the city of Oxyrhynchus,[3] and from A.D. 285 there is a receipt to a village for one tunic and one cloak,[4] and from A.D. 314 a payment to the village of Caranis for 24 tunics and 8 cloaks.[5] From 318 we possess a list allocating orders for tunics and cloaks between 17 villages of the Oxyrhynchite name.[6]

---

[1] *Ed. Diocl.* xix. 26–7, 32–42.

[2] *Ed. Diocl.* xix. 60–61; cf. also xix. 47–50 for σιγγίλια, and 53–6 for *fibulatoria*.

[3] Strabo, VI. iii. 6, 9; Pliny, *Hist. Nat.* VIII. 190; Columella, *de Re Rustica*, VII. ii. 2.

[4] Strabo, IV. iv. 3.

[5] Strabo, XII. viii. 16; Pliny, *Hist. Nat.* VIII. 190; Dio Chrys. XXXV. 130.

[6] *Ed. Diocl.* xxv. 1–9.

[7] *Ed. Diocl.* xvii. 4–5.

[8] *Ed. Diocl.* xxvi. 4–12.

[9] Pliny, *Hist. Nat.* XIX. 14.

[10] *Analecta Bollandiana*, VIII (1889), 26, XXII (1903), 13.

The army authorities would surely not have distributed their orders to hundreds of villages, an undertaking which involved a heavy burden of administrative and clerical work, if they could have placed them in a few large centres. It is even more significant that the Judaean and even the Cappadocian commands placed orders in Egypt for woollen garments, which were not an Egyptian speciality. This implies that the weaving industry of Cappadocia and Judaea had little surplus capacity above local needs, and was incapable of supplying the relatively large forces stationed in these countries. The army supply authorities therefore had to distribute their orders over a wider field; Egypt with its large population and small garrison was a suitable area on which to draw.

During the fourth century the needs of the army were partly met by large state factories, *gynaecia* (for woollens) and *linyphia* (for linens), probably established by Diocletian. But the compulsory purchase or requisition of military garments also continued. This levy was apportioned on the same assessment as the levies of *annona.* A law of 377 fixes the number of *iuga* or *iuga et capita* on which a *vestis* was assessed in the dioceses of Thrace, Asiana, Pontica, Oriens and Egypt.[7] The levy must therefore have been evenly spread over the whole countryside of all provinces. The system again implies that the production of medium grade clothing was very evenly distributed throughout the empire.

In an industry of such a structure the normal unit must have been very small. The guild of woolweavers at Philadelphia, which received an army order in 138, complained next year that they could not execute it, as four of their twelve members had been sent to Alexandria.[8] At Euhemeria, a smaller village, the weavers' guild in Tiberius' reign comprised a president, secretary and at least five other members.[9] If there were twelve, or even only seven, woolweavers in a village, none of them can have had a large workshop. That similar conditions applied in ordinary towns, which were not large centres of manufacture, is implied by the existence in them also of guilds of wool and linen weavers. The evidence, which outside Egypt comes from inscriptions, is scanty but indicates that the guild organization was everywhere normal.[1]

---

[1] *P. Ryl.* 189.

[2] *BGU* 1564.

[3] *P. Oxy.* 1414.

[4] *P. Michael.* 21.

[5] *Journal of Roman Studies,* XXXVII (1947), 30–33. *BGU* 620 is another payment of about the same date. The price of a στιχάριον is the same (4000 dr.) and the total order comes to 11 talents (66,000 dr.).

[6] *P. Oxy.* 1448.

[7] *Cod. Theod.* VII. vi. 3.

[8] *BGU* 1572, *P. Phil.* 10.

[9] *P. Ryl.* 94.

Some rural weavers were fairly substantial men. They were in principle immune from liturgies, but we hear none the less of one who was appointed elder of his village, and in the early second century the prefect of Egypt ruled that any who were worth more than one talent (1500 denarii) and owned private land should not be exempt.[2] But the fact that the government paid in advance for the garments which it ordered not only from the village of Philadelphia but also the city of Oxyrhynchus indicates that not only rural but urban weavers were as a rule men of very limited resources. A lease from Heracleopolis dated A.D. 246 [3] is suggestive of the average size of an urban weaving establishment. A weaver leases two thirds of a house, with the provision that he may set up three looms, and one extra if he is weaving a garment for his own use. Such a man must have had a few assistants, members of his family, apprentices, hired workers or slaves.[4] Alfius Caecilianus, duumvir of the little African town of Aptungi in 303, was apparently a prosperous weaver of this type. On the day that the edict of persecution arrived, he deposed, 'I had gone to Zama to buy linen yarn with Saturninus', and later Ingentius 'came to me at my house; I was having dinner with my workmen'.[5] We do not know if his workmen (*operarii*) were slaves or free men.

Egyptian census returns show families in which both parents and children (of both sexes) are registered as wool or linen-weavers.[6] We have from Egypt about a dozen contracts of apprenticeship in the weaving trade,[7] and half a dozen contracts of service for one to five years.[8] Further evidence for free hired labour is provided by census returns of persons who describe themselves as 'wage earning weavers' [9] and by a petition dated A.D. 140 from a man who complains that he is poor and makes his living by wage labour in the wool-weaving trade.[10] Again in the late third century the linen-weavers of Oxyrhynchus asked the city council for a supplement to the treasury payment for 100 tunics 'because of the increased price of the materials and the increased wages of the workmen'.[11] That hired labour was commonly employed throughout the empire is suggested by the Edict of Diocletian, which fixes wage rates for *lanarii* and *linyphi*. The former are paid by the pound of wool at rates varying according to its quality, the latter by the day according to the quality of their product.[12] Slaves were also sometimes employed. Five of the children apprenticed to weavers were slaves,[1] whom their owners presumably intended either to sell or to hire to a weaver,[2] or to set up in business as *institores*. A few of the weavers are freedmen,[3] who had no doubt started as *institores* or as hands of a working weaver.

---

[1] *ILA* 396 (*lanarii* at Carthage), *SEG* VII. 827 (λίνυφοι at Gerasa), *IGR* IV. 1226, 1252 (λινουργοί and λανάριοι at Thyateira), *IGR* III. 896 (λινουργοί at Anazarbus), *IGR* IV. 1632 (ἐριουργοί at Philadelphia), 863 (ἁπλουργοί at Laodicea), *Révue Archéologique*, XXVIII (1874), 112 (λινουργοί at Miletus), *SEG* IV. 541 (λεντιυφάνται at Ephesus), J. T. Wood, *Discoveries at Ephesus* (1857), p. 24 ((λανάριοι at Ephesus), *Athenische Mitteilungen*, VIII (1883), 319 λίνυφοι at Tralles).

[2] *P. Phil.* 1.

[3] *SPP* XX. 53.

[4] cf. *P. Oxy.* 1272 for a house at Oxyrhynchus inhabited by Heras son of Calathus, a weaver and his fellow workers (γερδίου καὶ τῶν σὺν αὐτῷ ἐργαζομένων).

[5] Optatus, *de schismate Donatistarum*, App. II, *P. Fouad*, 37.

[6] *BGU* 148, 1069, *P. Lond.* II. 257.

[7] *P. Oxy.* 275, 322, 725, 1647, *P. Tebt.* 385, 442, *PSI* 241, 287, *SPP* XXII. 40, *P. Mich.* 170, 171, 172, 346, cf. 123 R. II. 34. (cf. *P. Ryl.* 654, ἔστιν γὰρ αὐτῷ (a linen weaver) σύνεργος ὁ Παῦλος οὗτος, μαθητὴς μὲν τυγχάνων, εἰς [ἄσκησι] ν δὲ τῆς τέχνης ἀφεικόμενος.

[8] *P. Tebt.* 384, *PSI* 902, *P. Grenf.* 59, *P. Mich.* 121 R. II. viii, 355, cf. 237. 7, 37.

[9] *BGU* 1069, *SB* 4299.

[10] *Chr.* I. 325.

[11] *P. Oxy.* 1414.

[12] *Ed. Diocl.* xxi.

On the organization of the industry in the large centres we have only two pieces of evidence. In an Alexandrian document dated 192 A.D. one Isidore is described as 'head of a factory' or a 'chief of workshops of linen weavers, having many persons working in the trade'.[4] He must have been a man of some substance, since he was nominated to the liturgic office of subprefect of the Delta ward of the city. Whether he was a factory owner in the modern sense, employing hired hands, or an entrepreneur who put out work to weavers, is not clear. But it is likely that his linen-weavers were free persons. Caracalla, in his edict expelling Egyptian immigrants from Alexandria, remarks that 'genuine Egyptians can easily be distinguished from the linen-weavers by their speech'.[5] From this it would appear that the bulk of the linen-weavers of Alexandria were free Egyptians, who but for special exemption might have been repatriated to their native villages: had they been slaves, the question could not have arisen.

At Tarsus in the early second century Dio Chrysostom [6] states that a large proportion of the population were linen-weavers. He represents them as poor but respectable men, who would enjoy the rights of citizenship if they could afford the registration fee of 500 drachmae. The weavers must therefore have been free men of modest means, not necessarily very poor, for 500 drachmae is a large sum, about two years pay for a legionary. This suggests an organization in small family workshops, with a few apprentices and labourers, slave or free, as in the villages and towns of Egypt. It is also possible that the Tarsian linen-weavers were free paid employees of factory owners.

Were there then no large factories manned by slaves? We know of none except the imperial *gynaecia* and *linyphia* founded by Diocletian. These were large establishments: Sozomen in the fifth century speaks of the government wool-weavers at Cyzicus as if, with the mint workers, they formed a substantial part of the population of the town, and Gregory of Nazianzus uses similar language of the state wool-weavers and armourers at Caesarea of Cappadocia.[7] The weavers were legally state slaves. Constantine after his victory over Licinius freed Christians who had been made slaves of the treasury and drafted into *gynaecia* and *linyphia* [8] and the laws speak of the establishments as *familiae* [9] and their occupants as *mancipia*,[10] and apply to them the rules of the *Senatusconsultum Claudianum*.[11] In fact the workers in the state factories became in the fourth and fifth centuries hereditary castes, enjoying *de facto* most of the rights of free persons, marrying, rearing families and holding property.[12] On

[1] *SPP* XXII. 40, *P. Oxy.* 1647, *PSI* 241, *P. Mich.* 346. I have detected six other slave weavers (*BGU* 617, *P. Grenf.* 59, *P. Oxy.* 262, *P. Lips.* 26, *SPP* XXII, 36, *SB* 8263).

[2] As in *SPP* XXII. 36 and *P. Grenf.* 59.

[3] I have detected only three, two in *BGU* 1564 and one in *P. Oxy.* 984.

[4] *P. Oxy.* 2340, 'Επίμαχος Γαίου ὑποστράτηγος Δέλτα γράμματος ἀνέδωκεν τὸν ἡμέτερον ἀνθ' αὐτοῦ ἐργαστηριάρχην ὄντα λινούφων πολλοὺς ἐργαζομένους ἐν τῇ ἐργασίᾳ ἔχοντα.

[5] *Chr.* I. 22.

[6] Dio Chrys. *Or.* XXXIV. 21–3.

[7] Sozomen, *Hist. Eccl.* V. 15, Greg. Naz. *In laudem Basilii*, 57.

[8] Eusebius, *Vita Constantini*, II. 34.

[9] *Cod. Theod.* X. xx. 7.

[10] *tit. cit.* 2, 9.

[11] *tit. cit.* 3.

[12] *tit. cit.* 3, 16.

how their work was organized we have only one piece of evidence. Sozomen speaks of the *gynaeciarii* and *monetarii* of Cyzicus as 'a large population divided into two groups, who by the order of earlier emperors lived with their wives and families at Cyzicus, each year rendering to the treasury a stated stint of military tunics and of freshly minted coins respectively'. Analogy with the *fabricenses* and *barbaricarii*, the state armourers, suggests that the government provided them with rations [1] and with raw materials,[2] and insisted that each worker produced a fixed stint of finished articles [3] (in the armament factories a monthly quota of so many helmets per worker was laid down).

The processes prior to weaving seem to have been entirely unorganized. No one calls himself a carder or spinner on his tombstone, or registers himself as such in the census, and no guilds of carders or spinners are known. There are two apparent exceptions to this rule, the *lanarii carminatores* of Brixellum and the *lanarii pectinarii* of Brixia, who describe themselves as *sodales*.[4] But I suspect that these did not card raw wool, but teased woven fabrics. It must be presumed that the spinning was mainly done, as today in the Nearer East, by women in their spare time, who either used the flax grown on the family farm and the wool from the family flock, or, if townspeople, bought raw wool or flax. We know of one sixth century Egyptian linen-weaver who leased an *arura* of land to grow his flax.[5]

In the linen trade we hear of intermediaries between the spinners and the weavers, the linen yarn merchants (λινέμποροι): that they sold yarn and not cloth appears clearly from a papyrus from Oxyrhynchus, which is unfortunately very fragmentary.[6] The city council is debating the execution of a government order for 100 tunics. In the first fragment the president says that 'they (probably the λινέμποροι) have made the excuse that those who undertook this work and their wives are unable to spin the linen yarn; for there are few villages in your nome which have this product'. In the next bit he states that they (certainly the λινέμποροι) say 'that linen yarn stands at 49 denarii, and only 11 denarii have been paid them by [the fiscus]'. The council protests 'The linen yarn merchants must be content with 19 denarii besides the sum paid by the fiscus.' The debate then goes to the weavers. It would appear that the linen yarn merchants had been furnished with money from the Imperial treasury to buy yarn from the spinners, but complained that it was not nearly enough (this was a period of rapid inflation), and proposed to charge the weavers a higher sum; the latter in fact later claim a higher price for the tunics, and as one of their excuses urge the higher price of their raw material.

The finishing processes of fulling and dyeing were performed by workers who were quite distinct from one another and from the weavers. *Fullones* (γναφεῖς) and *coloratores* (βαφεῖς) formed separate trades, and were grouped in their own guilds.[7] Fullers not only finished newly woven garments but cleaned soiled ones. Dyers similarly not only dyed cloth straight from the loom, but gave a fresh lease of life to old clothes: this is clear from the Edict of Diocletian which fixes two scales of prices for the *colorator* according to whether the garment is *rudis* (*de tela*) or *ab usu*.[1] For fullers the Edict fixes only the prices for treating new clothes, carefully listing 26 types of garment.[2] It would appear that the customer normally bought his clothes straight from the loom, and had them fulled himself. The Roman army certainly, as we have seen, bought clothes direct from the weavers. If the clothes passed through the hands of a merchant, he may have got them fulled and dyed before retailing them.

---

[1] Just. *Nov.* lxxxv. 3.

[2] *Cod. Theod.* X. xxii. 2.

[3] *tit. cit.* 1.

[4] *ILS* 7290, 7290a, cf. 7556b and c for a *pectinator* and a *pectinarius* from Ateste.

[5] *P. Cairo Masp.* 67116.

[6] *P. Oxy.* 1414. A guild of λινέμποροι is also known at Corycus in Cilicia (*MAMA* III. 770).

[7] Fullers: *ILS* 3127 (Spoletium), 6368 (Pompeii), 7248 (Falerio), 5594 (Mediolanium Aulercorum), 3362 (Mactar), *CIL* VIII. 12575 (Carthage), *ILA* 22 (Gigthis), *IG* XII. ii. 271 (Mitylene), *Athenische Mitteilungen*, VII (1882), 252 (Cyzicus), *IGR* iv. 863 (Laodicea), 643 = 1696 (Acmoneia), *Journal of Hellenic Studies*, XI (1890), 236 (Cilician city), *Chr.* I. 251 (Tebtunis). Dyers: *IGR* IV. 816, 822 (Hierapolis), 1213, 1239, 1242, 1250, 1265 (Thyateira), III, 360 (Sagalassus), *Bulletin de correspondence hellénique*, X (1886), 519 (Tralles), *Chr.* I. 251 (Tebtunis).

What little we know of the silk industry is derived from a few laws of the later Empire, some scattered items in the Edict of Diocletian, and Procopius' story of how Justinian established an imperial monopoly of the business. Owing to the fact that the raw material was very expensive and obtainable from one source only, the government, the structure of the industry was peculiar. From the late fourth century at any rate only the *comes commerciorum* or his subordinate *commerciarii* were allowed to buy raw silk from the barbarians. A law of Justinian orders the *commerciarii* to buy silk at 15 solidi per lb. and sell it at the same rate to the *metaxarii*.[3] The object of this monopoly was then not to make a profit, but to keep the price down by preventing competitive bidding between the merchants.

Procopius' description of the industry is not very clear. It was, he says, localized at Berytus and Tyre, where the merchants (ἔμποροι) and supervisors (ἐπιδημιουργοί) and craftsmen (τεχνῖται) lived: the last were humble manual workers who, when the imperial monopoly was established, either starved or migrated to Persia, whereas the merchants were men of substance and managed to weather the storm.[4] Procopius also speaks of merchants of silk garments at Constantinople and in other towns of the empire, who seem to be different from the merchants of Tyre and Berytus. On the other hand they are said to have raised their prices because they had to pay more to the Persians (for raw silk),[5] which would imply that they handled the whole business from the purchase of the raw material to the sale of the finished product. A law of Justinian couples the *metaxarii* or raw silk merchants with the *argentarii* (silversmiths and bankers) of Constantinople as wealthy people, by implication resident in the capital, who are in the habit of buying court sinecures for themselves and their sons.[6]

It would look as if some *metaxarii* not only bought raw silk but manufactured silk garments, organizing the work through 'superintendents', and sold them in the capital and other big towns: these normally resided where they sold their goods. Others may have sold the garments they produced to merchants – this would apply especially to the export trade to the west and to the distributive trade to minor cities of the empire. Others again may have sold the raw silk to 'superintendents', who may have been entrepreneurs, who organized the dyeing, spinning and weaving of the fabrics and sold them to merchants. These two last categories of *metaxarii* would naturally have resided in Phoenicia.

The workers in the silk industry were evidently from Procopius' description of them free persons. Whether they worked in factories or whether the work was jobbed out to them in their homes does not appear. The Edict of Diocletian gives time or piece rates for the various processes. The cocoons were apparently first dyed, if a coloured fabric was to be produced, for the Edict quotes different rates for reeling ordinary silk and dyed silk.[1] It also gives rates for spinning purple silk into pure or mixed silk thread.[2] These rates are by the ounce. Lastly the Edict gives daily rates for *sericarii* producing pure or mixed silk fabrics.[3]

---

[1] *Ed. Diocl.* vii. 54–63: the first word should be restored [color]atori from the Greek κορορ[άτ]ορι.

[2] *Ed. Diocl.* xxii.

[3] *Cod. Just.* IV. xl. 2, Just. *Nov. App.* 5.

[4] Procopius, *Anecdota*, XXV. 14–15, 25.

[5] *op. cit.* XXV. 16, 24.

[6] *Cod. Just.* VIII. xiii. 27.

It is possible that the production of very superior woollens, especially those dyed purple, was organized on similar lines to the silk industry. The Edict of Diocletian cites wage rates for spinners of first grade purple wool for smooth finished fabrics (πεξά), and for weavers of these and of *Mutinensia* and others, in the same sections as those for silk spinners and weavers.[4]

Finally a word may be said of the distribution of finished garments. In the smaller towns and villages the customer no doubt normally bought locally produced clothes direct from the weaver. In the larger towns, especially those which depended on imports, there were clothing dealers (*vestiarii*): they are frequently recorded at Rome, and occasionally elsewhere, and seem to have been humble folk, mostly freedmen.[5] We also hear of *negotiatores* or *mercatores*, who seem to have been importers of higher class garments from the larger centres of production. They often were natives of the producing areas, like Q. Calusius Severinus, a *civis Gallus* who was a *negotians vestiarius* at Pola, or M. Cluvius Tertullus, a *negotiator sagarius* at Milan who came from Apulia, or another Milanese *negotiator sagarius* who was by origin a *civis Mediomatricus*.[6] In the sixth century similarly we find George of Antioch, a silk merchant (*holosericoprata*) at Ravenna, and in the early seventh Peter of Alexandria, a linen merchant (*negotias linatarius*) at Panormus in Sicily.[7]

There were also itinerant merchants, who went from town to town with their bale of clothes, often making a regular annual round. Early in the fifth century Synesius of Cyrene speaks of one such, an Athenian, who was evidently a familiar figure; hearing that he has arrived he asks his brother, who is down at the port, Ptolemais, to buy three Attic cloaks from him on his behalf and to do so promptly before the best items in his stock have been sold.[8] The greater merchants also employed *circitores*, agents who went round selling their wares.[9] We know something of one of them, Jacob the Jew, whom a wealthy Constantinopolitan clothing merchant employed as his salaried agent in the early seventh century. He put him on board a ship bound for Carthage with a consignment of clothes, instructing him to sell them in Africa and Gaul. Jacob, as the story shows, hawked his goods around to individual customers in each port of call.[10]

Jesus College, Cambridge

---

[1] *Ed. Diocl.* xxiii, 2, τοῖς τὸ σηρικὸν λύουσιν; xxiv. 13, μεταξαβλάττην ἤτοι ἐν χρώμασιν ἀγένητον λύουσιν.

[2] *ibid.* xxiv. 14–5, πορφύραν εἰς ὁλοσηρικὸν (συψηρικὸν) νήθουσιν.

[3] *ibid.* xx. 9–11, σειρικαρίῳ ἐργαζομένῳ ἰς σουψειρικὸν (ὁλοσειρικὸν ἄσημον, ὁλοσειρικὸν σκουτλᾶτον). The context shows that weavers are in question.

[4] *ibid.* xxiv. 16, πορφύραν εἰς πεξὰ πρωτεῖαν νήθουσιν, XX. 12, 13, γερδίᾳ τρεφομένη εἱματίου πεξοῦ τῶν εἰς παράδοσιν, ἐν ἱματίοις Μουτουνησίοις ἢ τοῖς λοιποῖς τρεφομένη.

[5] *ILS* 7568–75 (Rome), 6668 (Bononia), 6688 (Aquileia), *P. Oxy.* 2230 (Oxyrhynchus), *Forschungen in Ephesos*, III, no. 63 (Ephesus).

[6] *ILS* 7576, 7578, 7579.

[7] J. O. Tjäder, *Die nichtliterarischen lateinischen Papyri Italiens*, no. 4–5, B. V. 13, VI. 14; *ILS* 7564.

[8] Synesius, *Ep.* 52.

[9] *Digest*, XIV. iii. 5 § 4, 'sed etiam eos institores dicendos placuit quibus vestiarii vel lintearii dant vestem circumferendam et distrahendam: quos volgo circitores appellamus.'

[10] *Doctrina Iacobi nuper baptizati, Abh. Ges. Gött. Phil. Hist. Kl.* NF XII. 3 (1910), p. 90.

FLORENTINE MERCHANTS IN ENGLAND, 1346–1436 *

by G. A. HOLMES

I

In the summer of 1449 the Commons in Parliament, generous as ever with other people's money, voted a poll tax to be paid only by alien merchants. The foreigners mentioned specifically as liable for the tax were the Venetians, Italians, Genoese, Florentines, Milanese, Lucchese, Catalonians, *Albertyns*, Lombards, Hansards and Prussians.[1] It is not the only occasion on which the Albertines were mentioned in parliament as if they were a whole nation. Five years later they were in the list of commercial groups which had privileges of exemption from Staple regulations and in 1410 a Commons' petition against clergy buying bills of exchange for their iniquitous payments to the Pope had cited as agents in these transactions 'certain Lombards or Albertynes dwelling in the city of London'.[2] They were in fact not a nation but the employees of a Florentine merchant family, the Alberti; none other than the family whose most illustrious, though illegitimate, son, Leon Battista Alberti, flourished in the reign of Henry VI and wrote the books which were so influential on Renaissance theories of painting and architecture. By 1449 the Alberti were long past their zenith, but for a century or more they had been prominent among Florence's mercantile families and the exploiters of English trade. After the commercial failures of the Bardi, Peruzzi and Acciaiuoli in the 1340's they came increasingly to a leading position among the bankers of the Papacy and the world-wide dealings which this involved included the transfer of nearly all the money leaving England for the papal chamber between 1363 and 1375.[3] Their factors in England lent money to the young Earl of March who entered into a burdened inheritance in the 1370's,[4] and they were mentioned as a famous Lombard company in the Good Parliament of 1376.[5] They also exported wool.[6] After the war between Florence and the Pope in 1376 had temporarily lost them their business with the papal chamber their importance sank and their chief representative in this country was employed by the rival Guinigi of Lucca,[7] who succeeded them as papal bankers, but they continued to trade in a smaller way through the reign of Richard II.[1]

---

* I am much indebted to Dr Nicolai Rubinstein for help with the revision of this article. (Abbreviations: CCR = Calendar of Close Rolls, CFR = Calendar of Fine Rolls, CPR = Calendar of Patent Rolls. Unless otherwise stated, manuscripts are in the Public Record Office.)

[1] *Rotuli Parliamentorum*, V, 144.

[2] *Ibid.* p. 276; III, 626.

[3] Y. Renouard, *Les Relations des Papes d'Avignon et les Compagnies Commerciales et Bancaires de 1316 à 1378* (Paris, 1941), pp. 295–301.

[4] 'Laurencio Frose Lumbardo de societate Albertinorum pro tot denariis domino accomodatis ... cxx. li. xiij s. iiij d.', B.M. Add. Roll 8727, 1374–5. Cf Renouard, *op. cit.* p. 619.

[5] *Rot. Parl.* II, 350,

[6] *Rayner Domenici* exports wool at London in 1365–6, E 122/70/18; Piero Marchi buys licences for wool export, 1371-3, *CFR, 1369–77*, p. 329. Both were Alberti factors.

[7] Niccolò da Lucca was a representative of the Alberti under Edward III and until 1381 (*CCR, 1377–81*, p. 460). In 1382 he was still in London but acting for the Guinigi (*CCR, 1381–5*, p. 265; *CCR*, 1392–6, p. 521). In 1392 he was an Albertine agent again and remained with them again until he is last heard of in 1401 (*CCR, 1389–92*, p. 352; in Michaelmas term 1401 he appeared in the Exchequer on behalf of the Alberti, E 159/178, Michaelmas Recorda, m. 34). In a letter written at Calais on 18 May 1394 John of Gaunt speaks of him: *predictum familiarem*

Their great days, when they seemed a whole nation to the Commons, came paradoxically as a result of ill-fortune in the city of Florence. Benedetto de Nerozzo degli Alberti, a leading member of the family, was carried by the revolt of the Ciompi in 1378 to a position of outstanding political influence which lasted through the brief government of the lesser gilds until 1382.[2] At the restoration of the oligarchy of the *Parte Guelfa,* Benedetto, like his political associates the Medici, became a hated and feared enemy of the ruling faction. The wealth of the family was greater than ever. In the Florentine celebrations of Charles of Durazzo's conquest of Hungary in 1385 the Alberti are said to have rivalled the commune in their ostentation. But the election of a close relative to the office of Gonfaloniere in 1387 led to a struggle with the oligarchy which ended in the exile of Benedetto and his cousin Cipriano.[3] Another batch were exiled in 1393 for an alleged plot against the *Signoria* and in 1401 the whole family.[4] The most hated enemies of the Guelfs were ironically the two families, the Medici and the Alberti, which gave most financial comfort to the Popes of the early fifteenth century. As their wealth grew more stupendous both were the more hated and at different times both were banished. The Medici returned from a later exile to rule. In their long exile from 1401 to 1428 the Alberti attained greater wealth than ever before. For a quarter of a century they were dispersed over the Mediterranean and European worlds: as Leon Battista wrote later, 'a part in the *Ponente* at London, Bruges, Cologne, a few in Italy at Venice, Genoa, Bologna, some at Rome, and in France not a few at Avignon and Paris, and so through the Spains at Valencia and Barcelona, in all of which places our Alberti remained many years the most honest and honoured merchants'.[5] In the same imaginary dialogues one of the exiles, Piero, describes how he kept the ear of the Duke of Milan by supplying him with the news of the world as he heard it from the branches of his family's businesses, from 'Our Alberti of England, Flanders, Spain, France, Catalonia, Rhodes, Syria, Barbary and of all those places where they still today maintain and direct trade. . . .'[6] The orders of exile in 1393 banished one member of the family to Rhodes, two to Flanders, and two to any other place they chose.[7] Some retired to nearby cities like Bologna, Padua and Venice but many spent their lives in far-distant trading centres. It was as a result of this physical dispersal that their commercial empire grew and that they organized it in a different manner from the centralized firms of the early fourteenth century with subordinate

---

nostrum Nicholaum de Luka de Florencia ad partes Italie Alemanie et ad non nullas alias partes pro certis negociis nostris prosequendis presencialiter destinemus (B.M. Add. Ch. 7487). Was he the Niccolò da Lucca in Florence to whom Antonio degli Alberti wrote from Bruges in 1387 (A. Wesselovsky, *Il Paradiso degli Alberti* (Bologna, 1867), I, pp. 151–2)?

[1] Niccolò da Lucca and Piero Marchi are prominent on the Exchange Roll in 1382–3 and Marchi in 1386 (*CCR, 1392–6,* pp. 518–23). The Alberti are apparently missing from the London wool exporters in 1380–81 (E 122/71/4) but Niccolò da Lucca was importing in 1384 (E 122/17/18) and he and Marchi exported wool in 1384–5 (E 122/71/9).

[2] F. -T. Perrens, *Histoire de Florence* (1877–83), V, 304–5, 333–4, 339.

[3] *Ibid.* VI, 42–5.

[4] *Ibid.* pp. 102, 107–9.

[5] L. B. Alberti, *I Primi Tre Libri della Famiglia*, ed. F. C. Pellegrini and R. Spongano (Florence, 1946), p. 121.

[6] Bk. 4, *Opere Volgare di Leon Bapt. Alberti*, ed. A. Bonucci, II (Florence, 1844), p. 392. The duke mentioned is Filippo Maria Visconti but it is impossible that Piero should have transferred his allegiance on the death of Filippo Maria (1447) to Ladislas of Naples (d. 1414) as stated elsewhere (p. 393) so Giovanni Maria may be intended.

[7] L. Passerini, *Gli Alberti di Firenze* (Florence, 1870), II, 250–264.

branches in outlying towns, such as the Bardi and Peruzzi and the former Alberti *Antichi* and *Nuovi*.[1] Correspondence in the Datini archives reveals that about 1400 different members of the family already had firms in a number of cities which, like the later enterprises of the Medici at their height, were independent though closely bound together by family relationships and investment.[2]

The intensification of Alberti activity in the *Ponente* dated from the exiles to Flanders in 1393. Soon after this, members of the family are directing the business in London. Gherardo de Benedetto, a son of the politician of the Ciompi revolt, appears in the English records in April 1396.[3] In 1398 there were two firms in London, one directed by Gherardo and another by Calcidonio and Niccolò degli Alberti.[4] For most of the reigns of Henry IV and Henry V the business in London was directed by Alessandro and Filippo.[5] Thereafter the active control seems to have passed into the hands of one Alessandro de Ferrantini until 1436.[6] Throughout this period they were the most prominent among the Italian firms operating in London.

Though they regularly shipped wool from both London and Southampton, this traditional business was not dominant in their affairs and their shipments were not remarkable.[7] The same is true of their exports of cloth and tin and of their imports of grain for dyeing cloth and of luxuries: they were considerable but they did not even rival those of the larger Venetian and Genoese merchants.[8]

---

[1] On the earlier Alberti companies see A. Sapori, 'La Famiglia e le Compagnie degli Albert del Giudici', *Studi di Storia Economica* (Florence, 1955), II.

[2] London, Bruges, Paris, Valencia, Barcelona, Malaga, Seville, Lisbon, Denia, Montpellier, Rhodes, Venice, Pisa, Rome, Bologna, Genoa (F. Melis, 'Malaga nel sentiero economico del XIV e XV secolo', *Economia e Storia*, III (1956)). See also R. Cessi, 'Gli Alberti di Firenze in Padova', *Archivio Storico Italiano*, ser. 5, XL (1907).

[3] *CPR, 1391–6*, p. 688, *Gerard domini Benedicti de Albertis*; cf. *Calendar of Plea and Memoranda Rolls of the City of London, 1381–1412*, pp. 240–1.

[4] Melis, *op. cit.* p. 26; E 159/177, Trinity Recorda (1401): *Societas Albertinorum cuius Societatis Geraldus est principalis.* Apart from Nicolò da Lucca the most active Alberti factor in the 1390's was Giacomo Monaldi, according to the English records. Bruges probably remained their headquarters in the North. There is a letter from Diamante and Altobianco degli Alberti about costs of shipment from England to Italy dated Bruges January 1396 in F. Bensa, *Francesco di Marco da Prato* (Milan, 1928), pp. 377–8.

[5] Alessandro in *CCR* from 1409 to 1413, Filippo from 1400 to 1429. They are once described as brothers (*Cal. Plea and Mem. Rolls, 1381–1412*, p. 304) but this is not born out by Passerini's genealogical tables. Alessandro is presumably the son of Nerozzo, an exile to Bruges, said to have been an exile in London in 1408 (Passerini, *op. cit.* Table 3) and Filippo the son of Tommaso (Table 6) said to have died in London in 1453 and to have had seven sons born in Bruges and London between 1414 and 1435 and a daughter, Agnoletta, married to 'Syr Jouffroy Selding' in 1437.

[6] 'Of the fellowship of the Albertini dwelling in the city of London' in October 1422 (*CCR, 1422–9*, p. 477). References to him after this are very numerous. In 1423 the fellowship of Florentines is distinguished from the fellowship of Albertini (*CCR, 1422–9*, p. 481).

[7] Filippo shipped wool from Southampton in November 1402 (E 122/139/4) and London in September 1404 (E 122/72/8), Ferrantini from Southampton in March 1433 (A. A. Ruddock, *Italian Merchants and Shipping at Southampton 1270–1600* (Southampton, 1951), p. 66) and March 1434 (E 122/141/22). Leon Battista records a tradition that the family had once done great service to Florence in bringing by land from *ultima Fiandra* enough wool in one consignment for all the clothiers of the city (*Primi Tre Libri*, p. 220) but this must refer to some great transaction of the mid-fourteenth century when wool was often scarce at Florence and the land route still important.

[8] E.g. Filippo exports cloth from Southampton in 1410 (E 122/76/32); Ferrantini from Southampton in 1433–4 (E 122/141/22) and from London in 1423 (E 122/161/1); Filippo imports grain and silk to Southampton, February 1403 (E 122/139/4); Ferrantini imports grain, damask and velvet to London, 1430 (E 122/74/11); Filippo imports kerchiefs to London, 1410 (E 122/76/32).

They may have been early, amongst the Florentines at least, in exploiting on a large scale the direct sea route from England to the Mediterranean. They were certainly unusual amongst Florentine firms in owning their own ships for the Northern trade and they had apparently developed a network of their own shipping before the end of the fourteenth century.[1] It was not however the trade in goods which gave the Alberti their prominence but banking and exchange, based at this time as before on the service of the Papacy. In the early 1390's Richard II wrote to Boniface IX to contradict reports that an Alberti factor, Niccolò da Lucca, had instigated anti-papal legislation. After pointing out that it was not customary for the opinions of such people to be consulted in parliaments, he goes on, 'nor would it be likely to enter the mind of such a prudent man to procure either openly or secretly that which would be contrary to the interests of his fellowship and that of other merchants pursuing the profit of exchange'.[2] The Exchange Rolls, on which licences were entered intermittently from 1400 to 1433, show that throughout that period the Alberti were by far the most important agents for the transfer of money by clerics, from small sums like the 80 marks for two clerks going to Rome on pilgrimage in 1407 to the 2500 marks for the Bishop of Durham's first fruits.[3] Most of this business, though it is generally unspecified in the licences, was doubtless connected with provisions, pilgrimages and litigation at the court of Rome. In 1426, for example, the Alberti were accused in the Exchequer of making an unlawful exchange of £419 to Rome for the Bishop of Lincoln. It was explained that his proctor and those of the Bishops of London and Worcester had been compelled to borrow from Leonardo degli Alberti and Cosimo de Medici at the Court of Rome and had repaid them through the Alberti of London.[4] One of the proctors involved in this case was Master William Swan who had been doing business as a legal agent at the papal court since about 1404. The miscellaneous entries over a number of years in his letter book show that nearly all the payments for his services and for the bulls which he obtained for English clients were made through the Alberti.[5] If the profit on all this business was no more than the 5 per cent recorded by Renouard in the mid-fourteenth century [6] it must have been considerable.

---

[1] Melis, *op. cit.* p. 27. A ship of the Alberti brings wine from Bordeaux in 1427, *Cal. Plea and Mem. Rolls, 1413–1437*, pp. 208-10.

[2] *Diplomatic Correspondence of Richard II*, ed. E. Perroy (Camden Society, 1933), pp. 149–50.

[3] *CCR, 1405–9*, pp. 211–212; *Foedera*, ed. T. Rymer (London, 1704–35), VIII, 441.

[4] *Monstrey ount a nous et a notre counsail noz bien amez Alexander Ferrantyn et Obertyn de Bardes marchantz de Florence coment par longtemps passez diuersez persones cestassauoir Meystre Thomas Chapman procutour de leuesque de Nicole meistre William Swan procutour de leuesque de Loundres et Herman Marcator procutour de leuesque de Wircestre en la courte de Rome pur le bon esploit et proffit de les ditz Euesque pur lour billes adonques esteantes en la Courte susdite appromptieront pur mesmes les Euesques dun Leonard de Albertis et Cosmo de Medicis Marchauntz de Florence demorantz en la susdite Courte de Rome diuerses graundes et notables sommes de monoye pur lesqueux sommes les procutours dessusditz feurent obligez ouec autres lour amis as ditz Leonard et Cosmo pur ent faire paiement en notre Roieaume dengleterre a vne certain jour parentre eux limite sur quoy mesmes les Leonard et Cosmo de lour graunde affiaunce enuoient par lour lettres as ditz Alexander et Obertyn pur receuier les dites sommes en notre Roiaume dengleterre a les jours dessusditz dount parcelle est paiez et parcelle nient paiez* .... (quoted from a privy seal letter of Hilary term 1429 in E 159/204, Michaelmas Recorda, m. 15).

[5] Bodleian Library, Arch. Seld. 23 B (cf. E. F. Jacob, 'To and from the Court of Rome in the early Fifteenth Century,' *Studies in French Language and Literature presented to Professor Mildred K. Pope* (Manchester, 1939)) contains many references to the Alberti, e.g. f. 35: '.... mitto vobis per Albertinos per litteras cambij xxxj ducatos et dimidium et titulum vestrum de prebenda de Penfae in ecclesia Meneuense....' I am indebted to Miss M. Harvey for drawing my attention to this source.

[6] Renouard, *op. cit.* p. 516.

The exchange business depended on a world-wide organization and close links with the Papacy. Two Alberti employees had been entrusted with carrying a book of the miracles of Edward II from Richard II to the Pope in support of the plea for canonization. The wages of Sir John Cheyney on his mission to Rome in 1408 were paid by them.[1] Filippo degli Alberti, with Richard Whittington of London, supervised the collection of Peter's Pence in 1409.[2] They were accused of embezzling the money which Richard II had provided for the Emperor of Byzantium.[3] In November 1428 the Alberti factor appeared in the convocation of the province of Canterbury with bulls of Martin V calling for financial support for the Crusade against the Hussites, the money to be paid to the Alberti's financial and political allies the Medici.[4] In 1437 the Alberti factor in London received the rectory of Charing in Kent by proxy for Cardinal Colonna.[5] In the *Della Famiglia* a family story about this business is put into the mouth of Piero degli Alberti. At one time he was patronized by King Ladislas of Naples and, after the King's death in the summer of 1414, his enemies at the papal curia persuaded John XXIII to demand suddenly a sum of over 80,000 florins, about £13,000 sterling, which was in the hands of the Alberti of London. It was remembered as a triumph that the Alberti of Venice were able to produce the cash within a week.[6]

The sudden end of the Alberti in England resulted apparently not from any local troubles but from an unexplained collapse at Florence in the years 1435–6.[7] In 1435 Alberti factors had bought a substantial amount of wool from William Willey of Chipping Camden; a copy of one of their bonds for future payment survives in the Medici archives at Florence.[8] In 1437 they still had not paid. A plaintive letter from the commune to Henry VI, asking for respite on account of the family's difficulties in Florence, did not prevent the council from issuing letters of marque to Willey a few years later allowing him to recover his debts by force.[9] In November 1439 the Bishops of St. Davids and Norwich and the Prior of the Hospitallers petitioned the King on account of some £2000 which they were owed by the Alberti and which they could hope to recover only from the estate of the dead Alessandro de Ferrantini.[10] The Alberti never paid William Willey. Ten years later the dangers and inconveniences attending the business of other Florentines as a result of the letters of marque persuaded the commune to take over the debt and levy it from the whole colony in England.[1] By that time the Medici had taken the place of the Alberti in London.[2]

---

[1] *Issues of the Exchequer*, ed. F. Devon (London, 1837), pp. 259, 308. In 1430 the council sent instructions through the Alberti to its proctors in Rome, *Proceedings and ordinances of the privy council*, ed H. Nicolas (London, 1834–37), IV, 14.

[2] *CPR, 1408–13*, p. 101.

[3] *CCR*, 1399–1402, p. 417; J. H. Wylie, *History of England under Henry IV* (London, 1884–98), I, 164.

[4] *The register of Henry Chichele, archbishop of Canterbury*, ed. E. F. Jacob (Canterbury and York Society, 1943), I, xlvii.

[5] *Idem*, p. 295.

[6] *Opere Volgare*, IV, 400. Some Alberti loans to the early fifteenth-century popes are mentioned by H. Sieveking, 'Die Handlungsbücher der Medici,' *Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften in Wien, Phil.-Hist. Klasse*, CLI (1905).

[7] Cessi, *op. cit.* pp. 258–9.

[8] G. Camerani Mari, *I Documenti Commerciali del Fondo diplomatico Mediceo* (Florence, 1951), p. 48, bond for £666.13.4 to be paid next Pentecost by Ferrantini and Ludovico de Canigiani, dated Camden, 12 November 1435.

[9] The letter from Florence, 30 June 1437 (*Official Correspondence of Thomas Bekynton*, ed G. Williams, Rolls Series, I, 248–9), says, without explanation, that the Alberti company 'in manifestam ruinam prolapsi sunt'. Henry's reply, 18 June 1438 (pp. 250–51), says that Willey won his case in a Florentine court and that two members of the family, Benedictus Bernardi and Franciscus de Altibianco, were quite prosperous enough to pay. Letters of marque were granted on 28 March 1440 (*CPR, 1436–41*, p. 398) and several times repeated.

[10] Rot. Parl. V, 13.

II

The Albertines were the most famous and perhaps the most interesting of a number of Florentine and other Italian companies which did business in England in the Lancastrian period. The great days of the Italian wool export trade were long past but by the early fifteenth century the Italians had largely adapted themselves to the changed condition of Northern trade and it is questionable whether they were less important in it than they had been a century before. One of the conspicuous features of the Lancastrian period was English hatred of the foreign merchant. The emotion was not peculiar to this age. From the cautious hints contained in the poem of advice written by a Frescobaldi for merchants voyaging to England in the early fourteenth century (they were to wear dark clothes and keep away from men of the court) [3] to the scandalous verses denouncing Empson's Genoese associate John Baptist Grimaldi, there is plenty of evidence that the foreigner had to watch his step. Nevertheless there seems to be something in the traditional view that this hostility was particularly concentrated in the reign of Henry VI.[4] The successful imposition of hosting laws, the imposition of special taxes on aliens, the *Libel of English Policy*, and the riots which drove the Italians briefly from London in 1456, were all contained within two decades of particularly bitter commercial jingoism, much of which was directed against the Italians. This detestation was no doubt a sign of their prosperity, perhaps of their holding a favorable position at a time when competition for markets and for the carrying trade was notably fierce. The reorientation of their trade had been a conspicuous success. They had lost their dominance in wool, but that was no longer so important. The growth of English control of wool export did not reflect a general growth of native commercial independence. In the cloth trade in the reign of Henry VI rather more than half the total was taken by aliens, a much larger proportion than in the fourteenth century. The key to Italian success was the direct trade between London and Southampton and the Mediterranean in galleys and carracks, which seems never to have reached in the fourteenth century anything like the proportions of the Lancastrian period. Their big ships dwarfed all those of the merchants of the North. Two Venetian galleys leaving London in April 1439, for instance, carried between them over 5000 cloths, a tenth of the total cloth export of

---

[1] A. Grunzweig, 'La fonds du Consulat de la Mèr aux Archives de l'État à Florence', *Bulletin de l'Institut historique Belge de Rome*, X (1930), 25–6. By this time Willey had sold his letters to an esquire called John Chyvall. The action of the commune seems to have been inspired by the Medici, acting on suggestions from their new branch in London (*Idem, Correspondence de la filale de Bruges des Medici*, I (Commission royale d'histoire, Brussels, 1931), pp. 8–9, 17).

[2] References to the Albertines occur persistently in the parliament rolls long after the family had ceased to have much, if any, importance in London, probably in formal repetitions of old lists of trading nations (as late as 1487, *Rot. Parl.* VI, 401).

[3] *Ricordo per chi passa in Inghilterra*
Vestir basso color, esser umile
Grosso in aspetto ed in fatti sottile, etc.

(S. L. Peruzzi, *Storia del Commercio e dei Banchieri di Firenze* (Florence 1868), p. 154).

[4] Much of the evidence is conveniently collected by R. Flenley, 'London and Foreign Merchants in the Reign of Henry VI', *English Historical Review*, XXV (1910).

England in a very good year.[1] Professor de Roover has recently pointed out that the Genoese, Venetians and Florentines of this period all regarded England as the final stop for their Flanders galleys and carracks to fill their holds before making for home and he connects this with the relative paucity of exports from Flanders itself.[2] But they were equally prominent in the less well studied import trade. One Venetian galley visiting London in 1421 (it was probably not the only one for the Venetian galleys generally came in pairs, but the account breaks off where the other should be) carried spices, damasks, velvets and silks valued for customs at £6,848.[3] That sort of trade was of course carried on in the high Middle Ages but it seems to have been on a much smaller scale. In the accounts of the new custom at London a century earlier the total alien imports and exports, apart from cloth, wool and wine, were generally valued at little more, sometimes less, than the one Venetian shipment in 1421.[4] The long term movement from cloth imports to luxury imports had eventually given the Italians a new opportunity. In addition to luxuries they were exploiting the possibilities of the growing cloth industry by bringing in large quantities of the necessary raw materials, woad and alum especially. One may legitimately doubt whether the Italians' share of English foreign trade in the reign of Henry VI was either absolutely or relatively much less than it had been in the early fourteenth century. But this revival and reorganization were separated from the age of the Frescobaldi and the Bardi and Peruzzi by a period in the late fourteenth century when the English themselves were substantially dominant in both the wool and the cloth trades and the system of galleys had not yet been fully developed. It is probable that at the turn of the century the native English had somewhat lost ground in their foreign trade as a whole.

The Italian trade in England may also be of some interest to those who wish to understand the material basis of the early Renaissance cities. Here also, to return to the Florentines, the problem is how commerce adjusted itself to the changed economic circumstances of the early fifteenth century; how it got over – for it is scarcely possible to believe that it did not get over them – the awful blows which destroyed the world of the Bardi and Peruzzi and initiated the material and moral depression of the late Trecento. The two best known facts about Florentine economic history in this period have been frequently reiterated. It is as probable as these things can be that the population of Florence in the age of the Medici was much smaller than it had been when it was described in the famous passage of Giovanni Villani relating to the year

---

[1] E 122/73/12.

[2] R. de Roover, 'La Balance Commerciale entre les Pays-Bas et l'Italie au quinzième siècle', *Revue Belge de Philologie et d'Histoire*, XXXVII (1959).

[3] N. S. B. Gras, *The Early English Customs System* (Cambridge, Mass. 1918), pp. 511–14.

[4] The figures, from E 356/2 and 9, are,

1322– 3	£ 8513. 5. 7	1332– 3	£ 6322. 9.10
1323– 4	9431.19. 6	1333– 4	10016.10 0 .
1324– 5	12344.19. 6	1334– 5	6199. 7.10
1325– 6	9622. 5.11	1335– 6	5517.16. 0
1326– 7	....	1336– 7	3058. 8. 6
1327– 8	3541. 9. 5	1337– 8	7379. 0.10
1328– 9	7879. 5. 1½	1338– 9	4683.17. 4
1329–30	7584.10.10	1339–40	5588. 0. 0
1330–31	6769. 9. 5	1340–41	5409.11. 0
1331– 2	10430.17. 0	1341– 4	3556.11. 0

The commodities taxed for this poundage were of the kind carried in the galley of 1421, i.e. commodities other than wool, wine and the standard sorts of cloth (Gras, *op. cit.* pp. 66, 263).

1338.[1] It has also been generally accepted since Davidsohn settled the matter in a magisterial article that the basic cloth industry, once the city's great glory, had shrunk to a fraction of what it had been at the time when Villani described it out of his own experience.[2] But, as in many other aspects of early Renaissance Europe, figures of absolute decline, however much grim pleasure they give to economic historians, are not illuminating by themselves when it comes to explaining the actual manifestations of society. The relative wealth of different communities and the wealth of individuals are perhaps more important. Florence in the age of Cosimo de Medici and Brunelleschi does not look like a city beaten down by economic decadence. On the contrary, it often looks like a city bursting with wealth and energy. Without entering into metahistorical questions of the economic basis of art and humanism, one cannot but be struck by the eagerness of the Florentines to engage in their expensive and mishandled wars of conquest against Pisa and Lucca, and to buy what they could not conquer,[3] by the large sums of money handled by the commune (the city's debt at the beginning of the fifteenth century was said to be over 5,000,000 florins and it was regarded as a safe investment),[4] by the great wealth of individual citizens as recorded even in the doubtless undervalued Catasto returns,[5] and by the eagerness of the Consuls of the Sea to spread Florentine shipping all over the Mediterranean.[6] In Italy, as elsewhere in Europe, the early fifteenth century seems to have been the age of the towns. It is at any rate a matter of interest to know how the Florentines made their money at this time. Most of the well-known evidence about this has come from two sources, the Datini and Medici archives. It seems worth while to make a survey of the material in English sources about their trade in England. We have seen something of the fortunes of the greatest company of this period. How did the rest of the Florentines fare in the century after the Black Death?

III

The bankruptcy of the big Florentine firms, which reverberated through Europe in the 1340's, brought to an end the fifty-year-old Italian empire in

---

[1] On Villani's figures see most recently E. Fiumi, 'La Demografia fiorentina nelle pagine di Giovanni Villani', *Archivio Storico Italiano*, CVIII (1950). There have been many inconclusive discussions of the taxation returns of the late fourteenth and early fifteenth centuries. The best evidence of long term decline is probably to be obtained by comparing the pre-Black Death evidence with the annual figures of baptisms from 1451, published by M. Lastri, *Ricerche sull'antica e moderna popolazione della città di Firenze* (Florence, 1775). See K. J. Beloch, *Bevölkerungsgeschichte Italiens*, II (Berlin, 1940), 127–39.

[2] R. Davidsohn, 'Blüte und Niedergang der florentiner Tuchindustrie', *Zeitschrift für die gesamte Staatswissenschaft*, LXXXV (1928).

[3] Florence was willing to consider a proposal of Boucicault to betray Pisa for 400,000 florins in 1404 (Perrens, *op. cit.* VI, 139) and Goro Dati reckoned that the war for Pisa cost the commune 1,500,000 fl. (*L' "Istoria di Firenze" di Gregorio Dati dal 1380 al 1405*, ed. L. Pratesi (Norcia, 1902), p. 136). On the expensive mismanagement of the deliberate aggression against Lucca in 1430, including Brunelleschi's scheme to divert the Serchio, see Perrens, *op. cit.* VI, 336–40.

[4] Dati, p. 139; Perrens, *op. cit.* VI, 166, 199. The commune could muster more money than the King of England, though his subjects were several times as numerous.

[5] E.g. the case of Palla Strozzi, the richest man in Florence in 1427, considered by P. J. Jones, 'Florentine Families and Florentine Diaries in the Fourteenth Century', *Papers of the British School at Rome,* XXIV (1956), 187. His total capital was under-assessed at 162,925 fl., about £27,000 st. His investment in government securities was probably nearer 126,000 fl. than the 94,000 which he declared and his business investment was probably considerably undervalued.

[6] See, most recently, A. Sapori, 'I primi viaggi di Levante e di Ponente delle Galere Fiorentine', *Archivio Storico Italiano*, CXIV (1956).

England, the financial system in which successive companies had controlled a large share of the wool export trade and of crown finance. The recurrence of the phenomenon of the Bardi and Peruzzi was prevented in the long run, not by the decline of Florence, but by the decline of the English wool trade. In the immediate aftermath of the bankruptcies, however, Florentine business here enjoyed a modest revival on the old lines which lasted until the city's great political crisis thirty years later. In the period 1350 to 1376 about 60 unmistakeable Florentine merchants can be found in the English records without going much beyond the printed ones. The Bardi company in London was reconstructed in 1357 by Piero di Rodolfo Bardi, who seems to have fared in some ways better than his bankrupt relatives at home, and operated until about 1368.[1] The Strozzi, who transacted papal business with England for a time in 1373, were especially active at this period [2] and the Peruzzi were still here.[3] Others doubtless developed independent businesses in long residence in this country, like the Lombards whose expulsion was demanded in parliament in 1376 (since they were in reality Jews and Saracens and perpetrators of nameless vices) if they exercised no other trade than brokerage.[4] In the early 1370's the Florentines seem indeed to have been in a rather flourishing position in England. The court faction's policy of selling licences for evasion of the Staple by direct export to the Netherlands, which was pursued from 1372 to 1375 and condemned in the Good Parliament, was eagerly exploited by them. In 1372 known Florentines bought licences for export of over 6000 sacks of wool, mostly from their traditional exporting ports of London, Boston and Hull.[1] Though their share of the wool trade in the 1360's, when the Staplers were ascendant, seems, from what evidence there is, to have been rather small,[2] some Florentines, notably Giacomo Giacomini and the Strozzi representatives, revived the trade considerably in the later years of the reign. Florentines also played some part in the obscure court finance of the period before the Good Parliament, though the main recorded participant was Gualtero Bardi, son of the reorganizer of the Bardi in this country, who was master of the mint from 1363 and remained independently in London until 1391.[3] Between 1372 and 1375 the Bardi were able to secure the nominal repayment of over £12,000 of their ancient debt in a series of schemes by which the London merchants John Pyel and Richard Lyons lent to the crown in return for the payment of old Exchequer bonds.[4]

---

[1] A. Sapori, *La Crisi delle Compagnie Mercantili dei Bardi e dei Peruzzi* (Florence, 1926), p. 87; *CPR, 1367–70*, p. 187.

[2] Renouard, *op. cit.* p. 299. A receipt by the Strozzi for money received from Archbishop Langham in 1372 is mentioned in *Historical MSS Commission, 4th Report*, appendix, p. 186. In 1373 Michele Strozzi is exporting wool (*CFR, 1369–77*, p. 233); in October 1375 Azolino de Strozzi and Giovanni Credi are doing foreign exchange for the King (*Ancient Kalendars and Inventories of the Exchequer*, ed. F. Palgrave (London, 1836), p. 243). In 1373 Credi and in 1375 Credi and *Francis Johan* are of the Old Strozzi (E 403/447, 22 Dec.; *CPR, 1374–7*, p. 196), in 1376 they are of the company of *Charles de Strociis*; *Bernard Georgii* and *Bernard Antonii* of that of *Signor Pazzinus de Strozzis*, Niccolò Rosselli of the New Strozzi in 1373 (E 403/447, 22 Dec.) and later of the company of *Thomas Marchi de Strozzis* (*CCR, 1374–7*, pp. 472–3).

[3] In October 1351 the merchants of the firm have protection like the Bardi (*CPR, 1350–54*, p. 150). In 1372 we meet *Dyne Perusyn* and *Nicholas Peruse* (*CFR, 1369–77*, pp. 182, 183, etc.) and in 1376 *Arnald Johannes* and *Nicholas Johan* are said to be Peruzzi agents (*CCR, 1374–7*, p. 472).

[4] *Rot. Parl.* II, 332. Brokers admitted in the city of London in 1373 include these Florentines: Ludovico and Niccolò *Poule*, Niccolò *Boneicut*, Gulielmo *Tedys*, Matteo Cennini, *Niccolò Dyny*, *Lawrence Johan*, *Calendar of Letter Books of the City of London, G*, ed. R. R. Sharpe, pp. 313–4). Other merchants mentioned as Florentines in English records in the years 1350–1377 are: Luigi Aldobrandini (*CCR, 1369–74*, p. 409), Niccolò *Amannat* (*CCR, 1364–8*, p. 215), Ludovico d'Andrea (exporting wool from Southampton to Pisa in 1372, *Cal. of Plea and Mem. Rolls, 1364–81*, pp. 138–9; exporting cloth in 1374, E 101/128/13), Dino and Tommaso Biancardi (*CCR, 1374–7*, p. 473), Stefano *Boky* (*CCR, 1360–64*, p. 528), *Pochius* and *Donatus Bonage* (*CPR, 1361–4*, p. 250), Bartolomeo *Bonys* (*CPR, 1361–4*, p. 466), Angelo Cavalcanti (*CCR, 1369–74*, p. 216), Bernardo Donati (*CPR, 1358–61*, p. 319; *Cal. of Plea and Mem. Rolls, 1364–81*, p. 75), *Dynus* and *James de Petro Dyne*, brothers (*Cal. Plea and Mem. Rolls, 1364–81*, p. 173), *Bertrand de Florencia* (King's banker, *CFR, 1356–68*, p. 177), Bartolomeo *Franceys* (*CPR, 1350–54*, p. 303), Michele Gherardi (*CCR, 1354–60*, p. 587), Filippo Gherardi (*CPR, 1361–4*, p. 312), Giovanni di Guccio (*CPR, 1370–74*, p. 263, said to have been since youth in London), Filippo Grimaldi (*CPR, 1361–4*, p. 322), Giacomo Giacomini (frequently from *CPR, 1361–4*, p. 466), Michele *Karle* (*CFR, 1369–77*, p. 150), Giovanni Lapi (*Cal. Plea and Mem. Rolls, 1364–81*, p. 30), Zanobi Martini (*Calendar of Inquisitions Miscellaneous, 1348–77*, p. 355, buying wool at Salisbury in 1374), Niccolò *Negrebon* (*Cal. Plea and Mem. Rolls, 1323–64*, pp. 258-9), Filippo Neri (*Idem, 1364–81*, p. 158), Silvestro *Nicholas* (*CPR, 1361–4*, p. 312), Filippo Onget (*CPR, 1350–54*, p. 411), Tommaso Rosselli (*CPR, 1358–61*, p. 349), Arnaldo Sassetti (*CCR, 1374–7*, p. 494), Agostino Simone (*CPR, 1367–70*, p. 281), Enrico *Siremasy* (*CPR, 1364–7*, p. 416), Gaillard Tani (burgess of Winchester, *CPR, 1367–70*, 274).

This promising revival of fortunes came to an abrupt end in 1375–6. As a result of the War of the Eight Saints against the Pope, which began in the summer of 1375, the Florentines found themselves in 1376 crippled by an interdict, which hampered their activities all over Europe, and by a ring of papal allies, which blocked their life line to the coast. A more effective strangulation of the city's commerce could scarcely have been devised and there is little doubt that the effects of her folly on the already declining cloth industry led directly to the revolt of the Ciompi in 1378. These events also explain the sudden disappearance of the Florentines from England. Not only did the papal chamber cease to use the merchants of Florence as its agents[5] but papal activity made international trade more difficult.[6] The proceedings of the Good Parliament of 1376 include two petitions against specified debtors who had fled: one of them against a group of merchants, known from other records to have been active in wool export, who had received wool to the value of many thousands of pounds on credit from merchants of Lincolnshire,[7] and the other against Giacomo Giacomini as a debtor protected by the crown.[1] It is quite likely that the default of the exporters, acknowledged by their compatriots in this country, was caused by real inability to pay. Most of those who had not already fled soon did so. The Peruzzi went never to return again and only a handful of the many Florentines operating in London in the early 1370's survived into the reign of Richard II. The collapse of 1375, rather than that of 1346, was the final end of the Florentine régime. It was never revived in its old form.

---

[1] *CFR, 1369–71*, pp. 161, 164–7, 171, 182–3, 188, 194–6. There are many fewer licences in 1371 and 1373–5 but this may be because they are not enrolled. The marked improvement of alien as against denizen figures and the diversion of exports from Calais throughout the period 1372–5 can be seen in A. Beardwood, *Alien Merchants in England, 1350–77* (Cambridge, Mass. 1931), Appendix C. In April 1371 Giacomini and the Strozzi and others lent the King 2,000 marks (E 401/505, 15 April; Calendar of Ancient Deeds, IV, A 10212). On 22 December 1373 the New and Old Strozzi were allowed £6000 as a prest by the Exchequer *super quibusdam secretis negociis domini Regis* .... They repaid in November 1374 (E 403/447).

[2] In 1366–7 the most prominent Florentines were Giacomini, Silvestro *Nicholas* and *Reyner Dominici* (E 122/70/18).

[3] Beardwood, *op. cit.* pp. 5–9.

[4] The nominal repayments are listed in the final settlement of the Bardi debt in 1391 (Beardwood, *op. cit.* pp. 129–31) and the loan agreements recorded in *CPR, 1370–74*, pp. 196–7, 319; *1374–6*, p. 6; *CCR, 1374–7*, p. 41; E 401/508, 16 August, E 401/513, 13 July, E 401/515, 23 August, E 403/454, 18 Sept.; cf. M. McKisack, *The Fourteenth Century* (Oxford, 1959), p. 391; K. B. McFarlane, 'Loans to the Lancastrian Kings: the Problem of Inducement', *Cambridge Historical Journal*, IX (1947), 63.

[5] Renouard, *op. cit.* p. 285.

[6] In March 1376 a ship carrying wool belonging to the company of Pazzino de Strozzi, which did business in England, was seized by ships under papal orders ('Diario d'Anonimo Fiorentino, Cronache dei Secoli XIII e XIV', *Documenti di Storia Italiana, pubblicata a cura della R. Deputazione sugli studi di storia patria per le provincie di Toscana ...., VI* (Florence, 1876), 308, cited by Jones, *op. cit.* p. 187; *Archivio Storico Italiano*, ser. 3, VII (1868), 264).

[7] Tommaso and Dino Biancardi, *Nicholas Johan de Peruciis* and *Arnald Johan de Peruciis* (*Rot. Parl.* II, 350; *CCR, 1374–7*, pp. 252, 440, 472–4). The defaulters had apparently claimed connexion with the Alberti or Strozzi but representatives of those companies denied it. Licences on the Fine Rolls show that the culprits had been active at Boston.

As in the history of the Alberti conneion with England, so, yet more markedly, in the history of the Florentine conneion as a whole, a distinct gap separates the calamity of 1375 from the revival of commerce in the 1390's. The exodus of the chief Italian colony left the field free for the English. The first decade of the reign of Richard II, with the alien less active in wool export and not yet taking a large share of the growing cloth export,[2] was the heyday of the English merchant. The natives of the age of John Philpot, William Walworth and Nicholas Brember controlled a larger proportion of the country's commerce than their predecessors of the age of de la Pole or their successors of the fifteenth century. When the Florentines returned at the end of the reign it was to a radically changed situation. In the first place the Genoese and Venetians had stolen a march on them [3] and it is probable that, in the commerce in visible goods, the Florentines from this time generally came third. Secondly, and partly on the initiative of these rivals, the pattern of Italian enterprise in England had shifted – Cotswold wool superseded that of Yorkshire, Southampton came to prominence, the possibilities of cloth export and luxury import were realized. The Florentines fitted into this pattern.

The most prominent of the few Florentines remaining in England during the lean period were independent men who had local interests in London: the master of the mint, Gualtero Bardi, and the man bearing the deceptively English title of 'Mathew Cheyney' who was really, as Dr Fryde has shown, Matteo Cennini,[4] a broker of London. For two years from the spring of 1384 to the summer of 1386, during which the King was out of sympathy with the mercantile interest and the trade of the Staple was seriously hampered by the war in Flanders, these two were the chief lenders to the crown and advanced over £24,000 in return for crown jewels as security and substantial premiums in the form of repayments of old royal debts.[5] Apart from these men and the Albertines, the few Florentines operating during the period 1377 to 1390 were probably small independent merchants.[6]

---

[1] *Rot. Parl.* II, 332. He was named as a debtor to the crown in November 1372, *London Letter Book G*, p. 302, but was apparently still in England at least in September 1374, *Cal. Plea and Mem. Rolls, 1364–81*, p. 233.

[2] Graph in E. M. Carus-Wilson, *Medieval Merchant Venturers* (London, 1954), facing p. xviii.

[3] Ruddock, *op. cit.* pp. 44–55.

[4] A. Steel, *The Receipt of the Exchequer 1377–1485* (Cambridge, 1954), p. 146.

[5] Most of the loans are listed by A. Steel, *op. cit.* pp. 19–20, 44, 46, 49, 52–5, and the repayments of debt allowed to Bardi as considerations for the loans were duly listed in the final account made in 1391, Beardwood, *op. cit.* p. 130. See also N. B. Lewis, 'Article VII of the Impeachment of Michael de la Pole in 1386,' *English Historical Review*, XLII (1927). In the last loan made by Bardi on 8 June 1386, for example, he advanced £1000 in return for repayment of 500 marks of debt (Steel, p. 20; Beardwood, *loc. cit.*; *CPR, 1385–9*, p. 150). A fragmentary memorandum apparently relating to this loan (C 47/67/11) records Bardi's demands for a proportion of the custom on each sack of wool at London until he has recovered both sums and for jewels as pawn. Earlier arrangements with these lenders about jewels are recorded in *Ancient Kalendars*, II, 10–11, 19.

[6] Survivors from the reign of Edward III were Ludovico d'Andrea (*CPR, 1385–9*, p. 194), Bernardo d'Antonio of the Strozzi (*CCR, 1381–5*, p. 602), *James Dyne* (apparently died in London 1395, *Cal. Plea and Mem. Rolls, 1381–1412*, p. 243), *William Tedys* (*Idem*, p. 83).

In the last decade of the fourteenth century, however, the picture changed again. The Florentines came back. Judging from the entries on the Exchange Rolls, the Alberti recovered their dominance of the ecclesiastical exchange business some time between 1391 and 1400 [1] and it was at the same period that substantial Florentine merchants engaged in foreign trade again became numerous in England. The period roughly from 1395 to 1436 forms a unity; it is the age of the Alberti's predominance and of the general resumption of Florentine activity, quickly accomplished and continuing with little change throughout this forty years. Of the better known names, the Tornabuoni,[2] Ardinghelli,[3] Orlandini,[4] Strozzi,[5] Borromei [6] and Bardi [7] were all active at various times during this period. A firm of Vettori [8] was particularly prominent in the reigns of Henry IV and Henry V and there were a number of other individual merchants.[9] There is evidence that the colony in London had some kind of a consulate at the end of the period.[10]

Francesco Giovanni appears in 1386 (*CCR, 1385–9*, p. 187–8), Giovanni Priore in 1385 (*CPR, 1381–5*, pp. 593–4), *Antony Thomas* in 1387 (*CCR, 1385–9*, p. 217) and *Jera Thomas* in 1379 (*CPR, 1377–81*, p. 365). A puzzling fragment of accounts of *Lavrens Jovanes* (presumably *Lawrence Johan* who was a broker in 1373) for dealings in cloth, wool and money in 1387 survives as C 47/13/6 (19). Mariotus Ferrantini, first mentioned in 1386 as an exchanger (*CCR, 1392–6*, p. 524) appears frequently between then and the end of the reign; e.g. as a miscellaneous importer and cloth exporter at London in 1391–2 (E 122/71/16), as a supplier to the households of Henry Bolingbroke and John of Gaunt in 1390–92 (DL 28/1/3, 3/2).

[1] *CCR, 1392–6*, pp. 544–8; *1409–13*, p. 439.

[2] Francesco de Marrini appears from 1400 (*CCR, 1399–1402*, p. 147) to 1409 (*Cal. Plea and Mem. Rolls, 1381–1412*, p. 294), in the latter year 'in the name of the society of Francis son of Sir Simon de Tornabonis merchant of Florence ....' Francesco Tornabuoni 1404 (*CPR, 1401–5*, p. 392) to 1410 (*CCR, 1409–13*, p. 447) and Stefano 1412 ('attorney of Francis de Turnebonis and of the whole society of the same....', *Cal. Plea and Mem. Rolls, 1381–1412*, pp. 314–5) to 1433 (E 28/54/2).

[3] Neri Ardinghelli and Gualtero Bardi of the same firm 1415 (*CCR, 1413–19*, pp. 425–6) to 1417 (*Calendar of Ancient Deeds*, III, A 5801). Gherardo Davizzi (?), who appears in various anglicized and mis-transcribed forms (David, Davy, Davizes, Dauncy, Damciis) from 1412 (*CCR, 1409–13*, p. 451) to 1417 (*Cal. Anc. Deeds, loc. cit.*), is said to be of the Ardinghelli (*CCR, loc.* cit.); cf. *Neri Ardingeli et Guiraldo Daviti et socios Londonis* (R. Doehaerd and M. Kerremans, *Relations commerciales entre Gênes, la Belgique et l'Outremont, 1400–1440* (Brussels, 1952), p. 178).

[4] Giovanni Orlandini (sometimes *Rolandini*) 1404 (*CPR, 1401–5*, p. 392) to 1419 (*London Letter Book, I*, 229), Nicholas Orlandini 1404 (*CPR, loc. cit.*) to 1422 (*Cal. Plea and Mem. Rolls, 1413–1427*, p. 145).

[5] Marcellus de Strozzi 1414 (*CCR, 1413–19*, p. 151), Pinacius de Strozzi 1425 (*CPR, 1422–9*, p. 286).

[6] Benedetto Borromei from 1433 (*CCR, 1429–35*, p. 379), Galeazzo from 1430 (*Ibid.*) and Domenico di Tommaso, a factor of Galeazzo from 1424 to 1427 (*CCR, 1422–9*, p. 334).

[7] From 1422 (*CCR, 1419–22*, p. 230) there is a firm of Ubertino de Bardi, which became very prominent (G. Biscaro, 'Il Banco Filippo Borromei e compagni de Londra (1436–9)', *Archivio Storico Lombardo*, ser. 4, XL (1913), 59–60).

[8] Giovanni and Neri Vettori appear at various times from 1401 (I. Origo, *The Merchant of Prato* (London, 1957), p. 71) to 1423 (*CCR, 1422–9*, p. 479). Is the *Giovanni Riettori*, mentioned as an exporter of wool from London in 1417 (H. Sieveking, 'Aus Genueser Rechnungs- und Steuerbüchern', *Sitzungsberichte der kaiserlichen Akademie der Wissenschaften in Wien*, CLXII (1909), p. 95) a mis-transcription of this name? Giorgio de Niccolò da Lucca, a factor of Vettori in 1422 (*CCR, 1419–22*, p. 230), is prominent for many years after this. Vettori is the only firm, apart from Alberti, which I have noticed doing exchange for the clients of William Swan. They were financial agents in the complicated litigation of John Macclesfield, Master of the house of St. Antony in London, Bodleian, Arch. Seld. 23 B, ff. 90–102, 108.

[9] Piero Cambini, mentioned from 1393 (*CCR, 1392–6*, p. 44), and Domenico Caccini, mentioned from 1404 (*CPR, 1401–5*, p. 392), had a partnership for trade in London, which was formally dissolved at Bruges on 27 April 1407 (the certificate is C 47/13/10 (i), cf. *Cal. Plea and Mem. Rolls, 1381–1412*, pp. 294–5). See also Origo, *op. cit.* p. 349. Others mentioned in this period are: Matteo d'Azzino 1407 (*CCR, 1405–9*, p. 292), Francesco Bandi from 1427 (*CCR, 1422–9*, p. 334), Piero Bandini 1401 (E 159/177, Trinity Recorda, m 13), Filippo *Beeke* 1400–1 (*CCR,*

Wool remained a commodity with which the Florentines were much concerned. In 1441, when Florentine trade in this country was at a low ebb, the Consuls of the Sea were insisting that galleys must visit England to ensure the necessary supplies.[1] But the conditions of the trade had changed. Already in 1401 the Florentines who exported to Datini of Prato were buying their wool chiefly in the Cotswolds.[2] In contrast to Pegolotti's handbook of about 1340, which gives the famous list of abbeys supplying wool, there is a work of the same kind compiled in about 1440 by Giovanni d'Antonio da Uzzano in which the information about English wool consists chiefly of a detailed account of the costs of transportation from Cirencester to Southampton and thence by sea to Pisa.[3] The new organization is illustrated in cases which were brought against Florentine merchants in the Exchequer, no doubt by English rivals, for infringements of the statutes relating to the wool trade. We see the Florentines visiting the Cotswold market towns to buy and sending letters to their agent at Southampton, warning him of consignments to be expected for shipment in the galleys.[4] Dr Ruddock tells us that in the reign of Henry IV the Florentines became the chief exporters of wool from Southampton and the customs accounts show many firms exporting both from there and from London.[5] The old ambition of the Florentines to become a sea power and thus

---

1399–1402, p. 147), Zanobi di Ser Benozzo 1395 (*Cal. Plea and Mem. Rolls, 1381–1412*, p. 228), Giovanni Berti 1401 (E159/177) to 1411 (*CCR, 1409–13*, p. 226), Oliviero Cavalcanti 1401 (159/177) to 1407 (*CCR, 1405–9*, p. 251), Matteo *Conrade* 1423 (*Cal. Plea and Mem. Rolls, 1412–37*, p. 178), Antonio de Francesco 1421–30 (*CCR, 1419–22*, p. 216), Giovanni di Franceschi 1403 (*CCR, 1402–5*, p. 183), Ugolino Gherardi 1397 (*CCR, 1396–9*, p. 147), Lorenzo de Gherardi 1394 (*CCR, 1392–6*, p. 259), Gherardo Gili 1407 (*CCR, 1405–9*, p. 251), Filippo Aldobrandini 1401 (E159/177), Totto Machiavelli 1422 (*Cal. Plea and Mem. Rolls, 1412–37*, p. 145) to 1433 (E 28/54/2), Gherardo Mannini and Giovanni Marrini 1401 (E 159/177), Bartolomeo Marmorai 1417 (*CPR, 1416–22*, p. 123), Paolo Morelli, the agent in Southampton in the 1420's and 30's (Ruddock, *op. cit.*), Andree Roselayo 1411 (Doehaerd and Kerremans, *op. cit.* p. 176), Antonio Senguene 1397 (*CCR, 1396–9*, p. 62). Giovanni *Senoble* 1410 (*CPR, 1408–13*, p. 214), Giovanni Talenti 1401 (E 159/177), Domenico Villani 1433 (E 28/54/2) to 1438 (Biscaro, *op. cit.* p. 61). Some other names are known from the Borromei ledger (Biscaro, *loc. cit.*). The branches in London named in a list of firms allegedly prepared for the catasto of 1431–2 (A. Doren, *Studien aus der florentiner Wirtschaftsgeschichte* (Stuttgart, 1901–8), I, 497) do not appear in English records until later (Rabatta *c.* 1436, Biscaro, *op. cit.* p. 61, Baroncegli in 1451, *CCR, 1447–54*, p. 276); in particular there is no other evidence of a Medici branch before 1446 (L. Einstein, *The Renaissance in England* (New York, 1902), pp. 242–5), though A. Grunzweig (*Correspondence de la filiale*, p. vii) and Dr Ruddock (*op. cit.* p. 627) assume that one was established about 1425. Perhaps the document really belongs to a later date.

[10] Biscaro, *op. cit.* p. 86 (1437); Pagnini, *Della Decima* (Lisbon, 1766), IV, 119 (*c.* 1440). G. Masi, *Statuti delle Colonie Fiorentine all'estero* (*secc. XV–XVI*) (Milan, 1941), p. xxii, puts it back to 1402, but I see no evidence for this.

[1] Grunzweig, *La fonds du Consulat de la Mèr*, p. 15.

[2] Origo, *op. cit.* p. 71.

[3] Pagnini, *op. cit.* pp. 418–9.

[4] E.g. in a case brought in Trinity term 1429 against Francesco Serragli, the Alberti factor, Morelli, the agent at Southampton, *dicit quod idem Franciscus quadam vice infra tempus predictum misit eidem Paulo quandam litteram suam certificando eidem quod idem Franciscus adtunc transmittebat eidem Paulo vsque dictam villam Suthampton de villis de Burford et Wytteney in Comitatu Oxonie et aliis villis parcium de Cotteswold diuersas carectas oneratas ibidem cum xiij balis pellium ouinarum vocatarum passelarges alias dictarum Sherlyng ac medyesan scilicet de crescencia dimidii anni et pellium agninarum modo mercatoris cum cordis ligatis et arraiatis ad carriandum et eskippandum easdem xiij ad opus ipsius Francisci custodiendas quousque aliud ab eodem Francisco haberet in mandatis* ...., E 159/205, Trinity Recorda, m. 10. Other cases *ibid.* m. 11, 206, Michaelmas Recorda, m. 24 v. 217, Trinity Recorda, m. 5, 218, Hilary Recorda, mm. 12, 13. Cf. Power and Postan, *op. cit.* pp. 43–8.

[5] Ruddock, *op. cit.* p. 57. Florentines shipped wool, together with Genoese, from Southampton in 1390, E 122/137/9B. In January 1405 a group of Florentines and Genoese had licence to ship 2000 sacks westwards, E 159/184, Hilary Recorda, m. 15. Accounts for Southampton in 1403–4 show considerable Florentine shipment, E 122/139/4. The Florentine share probably declined

escape the dangers of dependence on the ships of other cities [1] was achieved after the acquisition of Leghorn. In 1425 the first voyage was made to the *Ponente* and in 1429 these voyages became regular.[2] But, although it is difficult to make a statistical evaluation, it does not seem that the coming of their own galleys made any substantial difference to the Florentines' trade in England.

Cloth had become of perhaps equal importance with wool. There were substantial shipments from Southampton in Genoese carracks by the Vettori and Mannini as well as the Alberti in the last year of Richard II and in the next forty years I have noticed the Alberti, Borromei, Orlandini and Giorgio da Lucca exporting.[3] In the import trade the customs accounts bear out as usual the accuracy of the statement in the *Libel of English Policy* (ll. 344–395) that the Florentines, like the Venetians but unlike the Genoese, dealt chiefly in the luxury trade in spices and rich cloths.[4] Uzzano's handbook lists the prices to be expected in London for various grades of silk, including an inferior sort suitable for poor knights, *poveri cavalieri*.[5] In a list of imports at Southampton, compiled in 1442–3 in accordance with the hosting laws, the Borromei and Bardi firms are found to be importing such things as ginger, sugar, malmsey and silk and these are comparable with the imports recorded in the customs accounts of the previous forty years.[6]

In all branches of trade, with the exception of wool, the Florentines were probably surpassed by the Genoese or the Venetians or both. Their area of supremacy was finance. Not royal finance; here the part played by the Italians as a whole during this period was negligible. One firm indeed complained cryptically that they had suffered from the fall of Richard II,[7] and Filippo degli Alberti advanced an essential 500 marks for Henry V's return journey

---

after the reign of Henry IV, though they are the most prominent in the account for Southampton 1433–4, E 122/141/22. At London in 1437 Giorgio da Lucca ships a lot but is overshadowed by Venetians, E 122/73/9.

[1] An example of this uneasiness seems to be given by a very faded letter from the Signoria to Henry V, dated 6 March 1418 (B.M. Cotton Nero B VII, f. 12), complaining that Florentine merchants had been prevented from shipping their exports from England in Catalan ships and compelled to ship them in ships of Venetians, *qui sibi minus sint beniuoli et quorum urbs preter omnem humanis generis societatem prohibetur eisdem nostris ciuibus iustitiam ministrari.*

[2] A. Sapori, *I primi viaggi*; Ruddock, *op. cit.* pp. 62–5.

[3] E 122/138/24, Southampton 1398–9; E 122/139/4, Southampton 1403, Orlandini exporting cloth; E 122/166/1, London 1422–3, Bardi, Vettori, Alberti, da Lucca; E 122/141/21, Southampton 1432–3, Borromei; E 122/73/34, London, 1435–6, da Lucca and Borromei.

[4] Venetian awareness of Florentine competition in this field is shown by Morosini's remark that, after the first Florentine galleys had visited the Levant in 1422, they were not able to fit out galleys to take their purchases to the *Ponente* in 1423 so that the Venetians expected a good market at London and Bruges that year (Antonio Morosini, *Chronique*, ed. L. Dorez and G. Lefèvre-Pontalis (Société de l'histoire de France, 1898–1902), II, pp. 233–4).

[5] Pagnini, *op. cit.* p. 125.

[6] E 101/128/31. Examples of imports in customs accounts are in E 122/139/4 (spices at Southampton, 1403), E 122/141/21 (spices at Southampton, 1432–3).

[7] Mannini, R. de Roover, *Money, Banking and Credit in Medieval Bruges* (Cambridge, Mass. 1948), p. 88 and n. p. 95; but the remark is unexplained. Mannini provided exchange for Richard II's envoys in Paris negotiating his marriage alliance in 1395–6 (G. Glotz, *Histoire du Moyen Age*, VII, i, *La France et l'Angleterre en Conflit* by J. Calmette and E. Déprez (Paris, 1937), p. 261). But his embarrassment in 1399 may have been due to political rather than financial involvement for in 1401 Salutati, the chancellor of Florence, wrote to Archbishop Arundel asking him to forgive Antonio Mannini for acting as Richard's envoy to the Pope to procure Arundel's replacement at Canterbury (*Epistolario de Coluccio Salutati*, ed. F. Novati (Rome, 1891–1911), III, 497–500; cf. J. H. Wylie, *The Reign of Henry V* (Cambridge, 1914–29), II, 497). The brothers Antonio and Alemanno Mannini did business in London at least from 1392 (*CCR, 1389–92*, p. 352) to 1402 (*1402–5*, pp. 5–6), cf. Origo, *op. cit.* pp. 71, 84.

from the Agincourt campaign.[1] Like the Genoese and Venetian communities, they made small loans when compelled to do so to avoid expulsion or persecution[2] but there was no place in the age of Cardinal Beaufort for a revival of the schemes of the fourteenth century. Ecclesiastical exchange dealings, however, were undertaken for profit and here the Florentines seem to have had a supremacy if not a monopoly. In addition to the predominant Alberti, the Bardi, Villani, Borromei, Giorgio da Lucca, Vettori, Orlandini, Caccini, Marrini, Tornabuoni and Ardhingelli are found in the Exchange Rolls.[3] Vettori and Lucca appear frequently and, after 1422, the Bardi who possibly succeeded the Alberti for a time as the chief ecclesiastical financiers.[4] One would like to know whether they enjoyed this superior position also in the financing of Northern trade. Unfortunately this is an obscure subject. Foreign exchange for lay purposes was rarely licensed, presumably because public opinion was less hostile to this kind of transaction than it was to the export of money to the court of Rome.[5] The growing English trade in the marts of the Netherlands must have created a need for exchange facilities which the Italian houses based on Bruges would be best able to meet. Indeed the *Libel* (*c.* 1437) accuses them of making an unreasonable profit out of it (ll. 409–17, 428–30):

> Than to carrye her chaunge they ben full bolde
> Into Flaundres; whan they this money have,
> They wyll it profre, ther sotelte to save,
> To Englysshe marchaundis to yeve it out by eschaunge
> To be paide agayne they make it nothing straunge
> Here in Englonde, semynge for the better,
> At the receyving and sighte of a letter,
> By iiij. penyes loss in the noble rounde,
> That is xij penyes in the golden pounde.
>
> . . . .
>
> Than these seyde Venecians have in wone
> And Florentynes to bere here golde sone
> Overe the see into Flaundres ageyne;

---

[1] Wylie, *op. cit.* II, 253.

[2] Wylie, *op. cit.* I,160, 474, II, 40; Power and Postan, *op. cit.* pp. 45–6; Steel, *op. cit.* pp. 147, 168, 198, 267. Cf. a note added to a council paper of 1433 dealing with an appeal by merchants of Florence, Venice and Catalonia to be excused from pleas against them in Exchequer about offences in wool export: 'the xv e day of Feuere the xj o yer of the King it was accorded because the merchants strangers wythynne writen haue prometted to lone at this tyme to the King Ml Li that that do the processe hanging agenst hem in the schequer be respited for the terme of vj yeer so that eche of hem be bounden for himself to answer than to the kynge for the somme rennynge vpon him in the said eschequer if so be it shal lyke the King than to axe it' (E 28/54/2).

[3] *CCR, 1392–6*, pp. 518–548; *1409–13*, pp. 439–45; *1422–9*, pp. 477–487; *1429–35*, pp. 369–87.

[4] Biscaro, *op. cit.* p. 60, found them to be the biggest customers of Filippo Borromei and Co. in 1436–9 and the chief transaction which he records was a payment to the Medici at the papal court.

[5] An example is a licence to Vettori on 5 September 1405 to exchange 1000 marks to Henry Brounynge, merchant of London, *CCR, 1409–13*, p. 440, but it is not clear with what place abroad the transaction was being made. Money for Henry Bolingbroke at Venice in 1393 was provided by letters of exchange from the Alberti of London, *Expeditions to Prussia and the Holy Land made by Henry, Earl of Derby . . . .*, ed. L. Toulmin Smith (Camden Society, 1894), pp. lv, 150.

The fragments which have been saved from the ledger of the bank of Filippo Borromei and Co. in London in 1436–1439 record many advances to London mercers at the Middelburg and Antwerp fairs repaid by bills drawn on London.[1] This Borromei company was a branch of a family based on Milan, though of Tuscan origin. In the general shortage of relevant records, at least in this country, it is impossible to assess the part of the Florentines in this business. One agreement by a Florentine to advance money to a London mercer at Middelburg in 1406 is the only piece of evidence which I have discovered.[2] Were the Florentines in control of this money market? On this important matter we await evidence and amplification. It seems probable, however, that Florentine prosperity in England depended on the flimsy structure of international finance rather than on the solid commodity trade of the Genoese and Venetians. In this, as in other ways, Florence lived more precariously than her rivals and more brilliantly.

St. Catherine's Society, Oxford

---

[1] Biscaro, *op. cit.* pp. 303–4.

[2] An indenture between *Zanobie de Nicole marchaunt de Florence* and *Robert Mercer marchaunt de Loundres*, 19 January 1406. Robert has received from Zanobi £70. 2s. 6d. *gros de Flaundres* at Middelburg *par eschaunge* and has given letters of payment addressed to *Johan Crowche Tauerner de Loundres* to pay the same sum at London to Zanobi or to Francesco Tornabuoni and Domenico Caccini on 4 March. Robert has also delivered to Zanobi certain goods, *en forme de Wage*. If Crowche does not cash the letter, Zanobi is free to sell the goods (*vn fardell de lindrape contenant vynt et trois centz et dousze halues diz bales de garance crappe estant en la nief de Pietre Jacob Sesze bales de garance crappe estans en la nief de Johan Hamelyn et noef liures et demy de koral et deuz peches de drape laune estaunt en lez mains et sauuegard du dit Zanobe*). Meanwhile they will cross to England at the risk of Zanobi up to the above sum. The document is witnessed by *Simon Berthelot et William Stox merchauntez de loundres* (E 159/184, Hilary Recorda, m. 3).

CLOTH PRODUCTION AND INTERNATIONAL COMPETITION IN THE SEVENTEENTH CENTURY

by CHARLES WILSON

'...... the whole World as to Trade, is but as one Nation or People, and therein Nations are as Persons'.[1] Pronouncements such as this, backed by the faith that it was peace, industry and freedom, not 'policies', that brought trade and wealth, were to make Dudley North a paragon to the later classical economists – 'an Achilles without a heel' as McCulloch described him.[2] To contemporaries, North's views must have sounded more like the triumph of hope over experience. There was, however, one respect in which North could claim that his conception was actuality and not merely wishful prophesying. For all the mercantilist barriers that criss-crossed them and bedevilled the fortunes of individual producers, the cloth markets of the seventeenth century formed something like a single theatre of economic operations, within which technology, patterns and fashions were borrowed (or purloined), raw materials bought, sold and smuggled, and finished products marketed, all on a massive scale. So that when in the next century the author of the *Chronicon Rusticum – Commerciale* compiled his devotional history of the English woollen industry, he found himself compelled to trace out the interlocking complexities of the Italian, Dutch, French, Polish, Silesian and German industries as well as those of his own.[3]

Even more than the conscientious Smith, the student who follows in his footsteps at the present time must share the view that the world's cloth markets and the industries that supplied them need, like a jig-saw puzzle, to be seen as a whole: taken apart, the component bits do not altogether make sense. This is particularly true of the English industry. Fortunately for the clothier, less so for the historian, the industry did not suffer from the attention of the exciseman, its raw materials did not, for the most part, pass through the Customs House, and much of its output was sold on home markets unchecked and untaxed by bureaucracy. The evidence regarding the volume of production and the ebb and flow of trade is therefore more than usually scanty, and Smith could censure, quite rightly, the 'Spirit of Romance .... and Credulity' that enveloped most writings on the subject. 'Extravagance and Ignorance' had produced merely 'a Heap of *Falsehood* and *Chimera's* ....'[4] The Dutch cloth industry, contrariwise, is richly documented and valuable statistical evidence of the Italian industry has recently been uncovered. The process of comparing and correlating this local evidence yields, it is suggested, a sum total of information greater than can be obtained by examining each parcel of evidence in national isolation. And because the dynamic of these industries was to a considerable extent international competition, important local developments that cannot be satisfactorily explained by local evidence can be illuminated by evidence of developments elsewhere.

The broad outlines of the English cloth trade, and the evolution of the industries that supplied it, have become tolerably clear in recent years. From 1615 at the latest the old broadcloth industry that had been a bright jewel in the earlier Tudor expansion ceased to glitter, and during the next quarter of a century its gleam became ever duller. This depression of the woollen industry proper was increasingly offset by the rise of a buoyant new industry, or rather a series of industries, which made many different fabrics. The broadest distinction between the old and the new was to be seen between the 'pure' cloth of the old order and the 'stuffs' of the new. The former, in which short carded yarn provided both warp and weft, was a fabric thick, fine and costly. The latter, in which both warp and weft were of the long, combed wool, was in general lighter, coarser and cheaper. Between these two technological limits there stood, however, a third type of fabric in which the weft consisted of carded yarn (or cotton or silk) while the warp was of combed yarn. Thus while the 'says' of Elizabethan fame came into the category of 'stuffs', the 'bays' and serges were a 'mixed' woollen and worsted cloth.[1] In general, the difference between the pure woollens on the one hand and the stuffs and mixtures on the other was that in the latter the pattern of the weave could still be seen in the finished fabric, while it disappeared from most, at any rate, of the fine thick woollens.[2]

---

[1] *Early English Tracts on Commerce*, ed. J. R. McCulloch. Discourses (1691).

[2] *Ibid.* p. xiii.

[3] John Smith, *Chronicon Rusticum – Commerciale or Memoirs of Wool* (1747).

[4] Smith, *op.cit.* pp. xi–xiii.

While newer stuffs and mixtures – the so-called New Draperies – were rising, the manufacture of woollens stagnated or even declined. It may be going too far to say that, by the eve of the Civil War, the trade in the newer fabrics almost equalled in value that of the old,[3] but the trend was unmistakably in that direction. The curves of the first four decades can without risk be extrapolated through the rest of the century and into the next. The trade in new worsteds and mixed fabrics introduced by the 'strangers' in the 1560's was putting the older manufacturers under severe competition by later Elizabethan times. By the mid-seventeenth century the old broad-cloth industry of Suffolk which had supplied a major share of Ipswich export cargoes was in decline, and a similar trend was observable in the West and later in the North.

'It surpasseth my skill' confessed Thomas Fuller, the antiquarian, 'to name the several stuffs. The nimble woof, its artificial dancing in several postures about the standing warp, produceth infinite varieties in this kind.' Fuller's 'infinite varieties', confusing to a contemporary, have become even more difficult to identify and classify with the passage of time, the corruption of names, the changed meaning of technical terms and the loss of identifiable samples. Yet without some attempt to identify, we shall lack the clues to the fortunes, good or ill, of the cloth industry, which was not a single industry but a

---

[1] This technical fact seems to invalidate the statistical assumption of Miss Deane [P. Deane, 'The Output of the British Woollen Industry in the Eighteenth Century', *Journal of Economic History*, xvii (1957)] that the output of the woollen and worsted industries respectively was in direct proportion to the supply of short and long wool. Such an assumption must surely exaggerate the output of the woollen manufacturers who used only short wool and underestimate the output of the makers of mixed fabrics who used a variety of yarns. In the early decades of the 18th century, the export of woollens proper was only a fraction of that of worsteds, stuffs, mixed cloths etc. See below, p. 211 n. 4.

[2] See, e.g. Lipson, *Woollen and Worsted Industries*, pp. 128–30; Astrid Friis, *Alderman Cockayne's Project and the Cloth Trade* (1927), pp. 1–3.

[3] F. J. Fisher, 'London's Export Trade in the Early 17th century', *Economic Hist. Rev.* Second Series, Vol. III, No. 2 (1950). Mr R. Davis, English Foreign Trade 1660–1700' in *Economic Hist. Rev.* Second Series, Vol. VII, No. 2 (1954), has commented that the figures of London trade, used by Professor Fisher, would naturally reflect the City's larger interest in Southern European markets (which took a higher proportion of the newer fabrics than the Northern markets). But see below p. 211.

congeries of industries whose relationships and fortunes were the result of continual competition for markets between their varied and changing products. East Anglia was the original home of the 'stuffs' proper. Norwich specialized in fine worsteds, or worsteds mixed with silk or cotton, the so-called bombazines widely used by middle class persons – as Clapham used to say, 'respectable women not of the first elegance'. Suffolk specialized in 'says', a hard-wearing worsted often used for men's dress. In Colchester, and along the Essex-Suffolk borders, the strangers had set up to make not only says but bays, a cheap unfulled mixture of worsted warp and woollen weft commonly used for cloaks. The 'perpetuanas' were not unlike bays. Lavenham made 'callimancoes', a light worsted in striped colours much in favour with Eastland traders who sold them to Russia where they were used by 'the Tartars and Siberian tribes for sashes'.[1]

Similarly, though more slowly, the West and North were turning over to the new fabrics. The earlier export trade from both these areas had been in the cheaper types of woollens – dozens or kerseys. The kersey was not, as is often said, a worsted but a coarser, thinner woollen which shared one characteristic of the worsted: it carried a visible pattern of weave. In the latter decades of the seventeenth century, Yorkshire was moving away from kerseys and dozens towards bays, serges and shaloons. Serges were, like bays, a mixed woollen and worsted. Shaloons, much used for coverlets and linings, grew mightily round Halifax. Such were to be the articles handled by Joseph Holroyd at the turn of the century and, a few years later, by Sam Hill.[2] Devonshire had changed tack equally decisively. By 1700, cloths and kerseys had made way for serges and perpetuanas, and Exeter's exports of serge represented a value not far short of half a million sterling, or 28 per cent, of the nation's cloth exports.[3]

By 1700, then, there could be no question that the new fabrics had established a predominance in the nation's woollen exports. Of the outport exports, Exeter serges and Norwich stuffs alone accounted for 60 per cent of the total.[4] The origins of this change are less certain. Professor Fisher has seen it as an essential part of the shift of emphasis in British trade from Northern to Southern Europe. The ending of the war with Spain opened up prospects of trade with Spain and the Mediterranean while the Thirty Years War darkened them in the North. He sees the 'New Draperies' as the response of industrial enterprise to a changed political and commercial situation, yielding 'a range of fabrics admirably suited for the warm but non-tropical Mediterranean'.[5] The conjunction of quality with a greater measure of commercial freedom than existed in the more Northerly and older markets ensured the success of the new trades. More recently, Mr Bowden has put forward another explanation of the supersession of woollens and one which differs, superficially at any rate, from Professor Fisher's. The dynamic of the change, he believes, was not commercial but technological. Of the several factors which explain the change of fortunes in cloth 'the most important . . . . was the changing character of the English wool supply'.[6] The main influence on the nature of wool, he suggests, was the pasturage itself. The area producing the finest wools was the area most susceptible to sixteenth and seventeenth century enclosures, and with enclosure came a heavier fleece and a longer staple: but the wool was coarser, less suited to the needs of woollens and more suited to the newer fabrics. The short staple wool, suitable for carding, which was produced was, he has argued, inferior to the imported wools from Spain. Hence the one spectacular success amongst genuine woollens in the seventeenth century was the 'Spanish' cloth of Wiltshire, to which Mr Ramsay has already drawn attention in his study of the Wiltshire industry.[1] Originally, Wiltshire clothiers had made principally undressed and undyed broadcloth. In the first decade of the seventeenth century, they turned to these so-called Spanish 'medley' dyed cloths, achieving a measure of success which alarmed their Dutch competitors, so that the merchant adventurers who imported the new fabric into Holland were forced out of their then staple, Delft, to the nearby and more complaisant city of Rotterdam. The fuller significance of this will be examined later.

---

[1] *Report on Hand Loom Weavers, 1840, Vol. XXIII*, p. 302.

[2] *Letter books of J. H. Holroyd and S. Hill* (Halifax, 1914). Also H. Heaton, *The Yorkshire Woollen and Worsted Industries* (Oxford, 1920), p. 268.

[3] W. G. Hoskins, *Industry, Trade, and People in Exeter 1688–1800* (1935), pp. 66–74.

[4] Davis, *op. cit.* See also the appendix to *The Answer of Robert, Earl of Oxford* (1715) which suggests that the pure woollens accounted for only a fraction of export values by the early 18th century.

[5] Fisher, *op. cit.*

[6] P. J. Bowden, 'The Wool Supply and the Woollen Industry', *Economic Hist. Rev.* Second Series, Vol. IX (1956).

If reference is made to the nature of European competition for the cloth markets, which it is the main purpose of this article to explore, it will emerge that the commercial and technological explanations of the trends of the English industry are less alternative, than complementary explanations. The evolution of other industries, the Italian and the Dutch in particular, illuminates both the elements of enterprise and technological change in the situation, suggesting at the same time that neither 'explanation' is without limitations.

In the Mediterranean markets the main new factor was the decline and virtual disappearance of Italy as a leading producer. The great Italian cloth making cities – Milan, Florence, Como – had all suffered vicissitudes in the sixteenth century. But in 1600, Italy still remained an advanced economy. By 1700 that was all changed. In the course of the seventeenth century the woollen production of the leading urban producers had dropped from somewhere between 70,000 and 80,000 cloths a year to a few thousand. The woollen and silk textile industries were all in final decline.[2] Venetian industry was most successful in postponing the end.[3] It had reached its peak somewhere between the 1580's and the 1620's, but as late as the 1640's, it could still rise to levels of production reminiscent of palmier days. Thereafter the decline was slow but inexorable. Its sources were the failure of Venetian industry to hold its markets, export markets especially, against foreign competition. The most recent and thorough inquiry suggests that the reason for this failure lay in the high costs of the industry and its inability to follow the caprices of fashion. Northern competitors in the Levant—England and Holland—produced fabrics 'more pleasing and less costly' which apparently seduced Turkish customers, as a report to the Senate explained in 1668.[4] The Turks wanted cheap, light cloths. The Venetians offered dear, heavy ones. Apart from the rigidity imposed on the industry and the character of its products by gild regulations, it is plain that raw material costs were a major problem. Venetian cloths were, traditionally, pure woollens comparable to English and (as will be shown later) Dutch woollens. They were made exclusively of fine Spanish wool, and the supply of this had fallen into the hands of a small group of monopolists. It seems, therefore, that raw material supply may have created something of a problem for the Venetian industry – Venice did not apparently attempt a 'New Drapery' – but the prime source of trouble was the appearance of the Northern 'Stuffs'. The 20 English 'houses' at Constantinople in 1600 boded ill for the future. By 1631 Venetian output dropped to 8000 pieces – between a third and a quarter of the volume of thirty years earlier.[1] It was nearly a century since it had gone so low. This diminution and ultimate disappearance of Italian competition left the way open for the Northern traders, whose ships had been appearing in the eastern Mediterranean regularly since the 1570's.[2]

---

[1] G. D. Ramsay, *The Wiltshire Woollen Industry* (1943), Ch. VII *passim.*

[2] C. M. Cipolla, 'The Decline of Italy', *Economic Hist. Rev.* Second Series, Vol. V, No. 2 (1952).

[3] D. Sella, 'Les Mouvements Longs de l'Industrie Lainière à Venise', *Annales*, No. 1 (1957). Dr Sella's figures are taken from material recently discovered in the *Archivio di Stato.*

[4] *Archivio di Stato, Senato Rettori*, 30 December 1668. Quoted by Sella, *op.cit.*

The consignments of textiles which formed a principal weapon of the English and Dutch traders in the battle for the Levant trade were thought of by the Venetians as of one kind, and as constituting a single threat: they were cheap, they were light and they were northern. It is a salutary reminder that though the English and Dutch industries were rivals, and though, under the pressure of competition in the seventeenth century, they were to develop along different lines, they stemmed in origin from precisely the same roots. Cloth making in Holland, as in England, was carried on in many places – Amsterdam, Haarlem, Delft, Gouda, Utrecht – and a score of smaller towns all had their cloth industries: but the most intensive concentration was at Leiden, and it is the Leiden evidence that has survived in greatest abundance and been analysed most thoroughly. By the middle of the seventeenth century Leiden, with 63,000 inhabitants, was a half to a third as large again as Bristol or Norwich. It represented the largest single industrial concentration in Europe, and was turning out cloth to a total annual value of 9 million guilders [3] – say about half the value of the total British cloth exports at the time. Probably the largest part of this was exported, and the competition with English textiles both at home and abroad was direct, sharp and continuous throughout the century. The structure of both industries was shaped in considerable measure by that competition and so were the patterns of their production.

Both these major competitors for the world's cloth markets owed their position to the revivifying stream of skill and energy that flowed from the Southern Netherlands in the 1560's and 1570's. The same Flemish refugees who brought the new Draperies to Norwich, Colchester and other towns brought the '*nieuw draperie*' to Leiden. They had presumably settled in East Anglia not only because it was their nearest refuge but also because it was already the centre of a worsted manufacture. In 1577 a small group of Flemish refugees at Colchester, bay and say makers, were enticed back to the Low Countries by the privileges offered them by the Leiden town government to settle in Leiden and set up their manufacture of stuffs.[4] From these small beginnings, there grew in the next half century an extensive and thriving industry which dwarfed the stunted remains of the old Leiden woollen industry, the '*Oude Leidsche Draperie*'. The products of this group of manufactures corresponded pretty closely to those of the industries which were growing up at the same time in England: there was, especially in the first half of the century, heavy production of bays (a mixed woollen and worsted as in England), says (a hard wearing stuff) and cheap mixed fustians. As the figures given below show, the output of pure woollens (*lakens*) was very small in these years. The balance of the Leiden industries, and their changing fortunes through the century, are apparent in the following tables showing production of the different branches of Leiden industry by pieces.[1]

---

[1] Sella, *op. cit.* Tables.

[2] See F. Braudel, *La Méditerranée et Le Monde Méditérranéen à l'epoque de Philippe II* (1949), esp. pp. 479–81.

[3] N. Posthumus, *De Geschiedenis van de Leidsche Lakenindustrie* (1939), Vol. III, pp. 882, 941.

[4] Posthumus, *op. cit.* pp. 12–14.

(total to nearest 000 cloths)

	Woollens		Worsteds or mixed cloths				Total
	lakens	bays	says	camlets	arras	fustians	
1620	1,500	17,000	50,000	—	6,000	22,000	97,000
1640	11,000	19,000	33,000	—	10,000	17,000	90,000
1660	20,000	16,000	34,000	38,000	3,000	7,000	118,000
1680	21,000	10,000	19,000	34,000	—	1,000	85,000
1700	25,000	6,000	8,000	37,000	—	6,000	82,000

Thus the outstanding feature of the period from 1620 to 1700 at Leiden was the rise of a new woollen manufacture, and the protracted but inexorable decline of the worsted and mixed cloth industries, with the exception of one – the *grein* or camlet industry. In short, the fortunes of the Leiden industries were exactly the reverse of those of the English textile industry, where the worsted group was in the ascendant and woollens in decline.

The explanation of this is not far to seek. For reasons, some of which are clear and others less clear, the Leiden *laken* manufacture reached a good competitive footing with its English counterpart; the Leiden worsted group did not: indeed it seems to have lost whatever advantages it began with. One of the original blessings bestowed by the Flemish innovators at Leiden in the 1570's was their emancipation of the industry from its dependence on imported English wool at a time when the volume of protest from English interested parties against the export of wool and ancillary materials was becoming ominously loud, and the revolt against Spain cut off the supply of fine Spanish wool. The 'new draperies' could use the long *kamwool* (combed wool) from domestic sources – North and South Holland, Brabant, Friesland and elsewhere – or from Pomerania. This was not, even for the less exacting requirements of the worsted group, of the best quality, and much of it evidently fell below the standard of the supply which had formerly been obtained from England. But it sufficed, in a period when the New Draperies in England were also having teething troubles, to establish the newer fabrics, for they owed their international reputation less to the quality of their raw materials than to the skill which was employed in dyeing and finishing them.[2] Such were the circumstances in which the large and flourishing manufacture of bays, says, fustians, and arras prospered in the early years of the seventeenth century, while the Old Drapery appeared to be dragging out a lingering death, deprived of its supply of both English and Spanish fine wool.

Then the trouble began. From the 1620's, bays and says began to run into difficulties, largely because of English competition, and especially, it would appear, in the Mediterranean markets. Leiden kept up a continual demand for protection in the home market and succeeded in 1643 in having dyed says and kerseys placed under the ban which had been introduced on dyed woollens during the Cockayne crisis in October 1614. Further demands continued to be raised whenever times were bad.[3] This was only one example of the trouble

[1] Constructed and adapted from data in Posthumus, *op. cit.* Vol. III, 930–31.

[2] For the technical details see Posthumus, *op. cit.* Vol. II, 257–279.

[3] See below p. 216 for the results during the depression of 1663.

Dutch industry was to run into time and time again: it was far from easy to counter successfully the arguments of the powerful mercantile interests whose business consisted in importing English cloth.[1] More serious, perhaps, was the prohibition of English wool export. It seems reasonable to suppose that as the English makers acquired new skills in worsted making and finishing, the previously marginal importance of wool became crucial. Drebbel's cochineal and tin dye came into use at Bow: a Portuguese immigrant, Devora, brought the anil blue dyes in 1643: Bauer, 'a Fleming', added his unspecified but highly regarded contribution after the Restoration.[2] Petty, Boyle and Hooke all presented papers on the subject to the Royal Society in the 1660's. The English, said the Governors of the woollens and bays industries in 1663, had stolen the technique and market for says from them.[3] The competition for obtaining supplies of appropriate wool thus became important. Since 1614, when the Anglo-Dutch disputes sharpened, and especially since 1622, when the Commission on the depression had drawn particular attention to the need, successive statutes and ordinances had tried to put teeth into the now traditional ban on wool export from England. There were prohibitions in 1622, 1630, 1632, 1634, 1639, 1647, 1649, 1650, 1651, 1652, 1660, 1662 – preliminaries to a code of legislation which remained in force till 1825. Scottish export, a convenient backdoor supply for the Dutch, was tackled by an Act of 1652. One of the excuses for the attack on New Netherland in 1664 was that the Dutch colonists were illegally purchasing large supplies of wool from their New England neighbours. The efficacy, and even more, the wisdom, of such legislation, has been much debated by later generations. One should not entirely neglect the view of contemporaries, English and Dutch, that the ban had important consequences. The neglect of the prohibitions, wrote the author of *The Golden Fleece* in 1656, would bring Holland and England to an equality or even benefit the Dutch. Their enforcement would damage the Dutch by forcing them 'to procure the wools through many Hands and several voyages'.[4] A few years later Leiden clothiers said the same thing: '.... England, spacious and rich in sheep (*schaepryck*) forbids the export of wool and has it better and in greater abundance (than us) so that our wool must be imported and pass through more merchants' hands, bearing freight and toll, and is necessarily dearer in price....' [5] Although the Acts never wholly stopped the export of English wool, they reduced it to an insignificant trickle in the seventeenth century – perhaps some 3 – 4 per cent of a total foreign supply to the Dutch cloth industry, most of which came from Spain.

Only one branch of the Leiden worsted industries made any real progress in the seventeenth century (as the figures eloquently show): the manufacture of *greinen* (camlets),[6] which began in the third or fourth decade. The reasons for this fall to be considered below. Bays held up better than the rest, but even they did not resist the sharper decline that set in after the Third Dutch War in the

---

[1] Amsterdam's trade with Exeter and Topsham, for example, consisted in trading German linens bleached in Haarlem for Devonshire cloth.

[2] See J. S. Burn, *History of the Protestant Refugees* (1846), p. 258. Also G. N. Clark, *Science and Social Welfare in the Age of Newton* (1937), p. 44, n.l. Roger Coke calls him Brewer, says his parents were English (victims of Laud?) and claims he brought fifty Walloons with him who instructed the English how to 'make and dye fine woolen cloths cheaper by 40 per cent than they could do before ....' (Smith, *Memoirs of Wool* (1747), Vol. I, p. 229).

[3] *Bronnen tot de Geschiedenis van de Leidsche Textielnijverheid* (1918), Vol. V, 1651–1702, No. 29.

[4] W. S. Gent, *The Golden Fleece* (1656).

[5] *Bronnen*, Vol. V, No. 29, para. 14.

[6] But see below p. 217 for the difference between Dutch *greinen* and English 'camlets'.

1670's. By 1700, the entire worsted group, with the single exception of camlets, was at a low ebb.[1]

The evolution of the Dutch woollen industry proper in Holland in the seventeenth century stands in strong contrast to the decline of the worsted group. Turning the Cockayne crisis energetically to advantage, the woollen manufacturers of Leiden used their better protected position to build up an expanding production of *lakens*. The industry did not escape its ups and downs, but, as the table shows, it was the only branch of the Leiden industry which enjoyed a fairly steady increase through the years from 1620 to 1700 and whose output was greater in the 1690's than at any other period of the century. Here again, we have the reverse situation from that in England, where the makers of pure woollens were in difficulties, save for the 'Spanish' cloths of Wiltshire and, later, of neighbouring counties.[2]

Closer examination of the evidence leaves little doubt that these contrasting situations in the two major European textile industries were the result of direct competition, product by product, between them; and that the special achievements of the woollen and camlet branches of the Leiden industry must be related to the exploitation of the unique advantage these industries (and they alone) possessed in regard to raw material supply. The surviving figures for the first two months of 1661 show clearly the pattern of Anglo-Dutch competition in cloth. There had come, in two months, and from London alone (the Governors of the *laken* and *bay* Halls at Leiden complained), the following: –

7,377 pieces of 'woollens'.
158,073 pieces of 'manufactures' (worsteds).[3]

Presumably the larger part of the woollens were undyed, for the import of dyed woollens was forbidden: Wiltshire Spanish cloths may have escaped this ban if dyed in the wool, but even so they would have paid a stiffish tariff after 1651. The main threat was obviously to the Leiden worsted group, which bore the brunt of this English competition: to be precise some 96 per cent Northern Kerseys from Yorkshire competed with cheaper Leiden bays and (it was said) drove them off the market. Four times as many English bays were said to be sold in Holland as were made at Leiden. Blankets were likewise threatened. The price of 'gentlemen's says' (*heerensaaien*) dropped by 25 per cent between 1660 and 1670 and production fell by 50 per cent in face of English competition.[4] The valuable markets offered by the monastic establishments of Italy and Spain – monks and nuns were conspicuous consumers of cloth for

---

[1] The decline continued in the 18th century. The say and fustian branches virtually disappeared. Posthumus, *Tables*, Vol. III, 1098.

[2] Gloucestershire Clothiers only began to use Spanish wool in the 18th Century. *V. C. H. Gloucestershire*. Also E. Moir in *Gloucestershire Studies* (ed. Finberg).

[3] See *Bronnen*, Vol. V, No. 30, para. 5 and No. 33, para 18. The detailed list is as follows:

7,377	cloths.
6,446	bays.
1,043	kerseys.
1,964	says.
11,967	serges.
8,366	perpetuanas.
10,494	hose.
110,316	'sayettes'.

It is not quite clear what was included in the very large item called 'sayettes': presumably it is a generic term for cheap, possibly unfinished, worsteds of a cheap kind.

[4] The detailed effects of English competition on prices and wages are fully described in the Leiden petition printed as No. 30 in Vol. V. of the *Bronnen*.

habits – were invaded by the English makers of says, kerseys and long ells.[1]

How then did the camlet and woollen industries manage to fare so well in this competitive stress? The answer would seem to be a combination of circumstances involving raw materials, marketing and pricing.

The *greinen* of Leiden evidently differed considerably from those rough English 'camlets' which appear to have been the last refuge of a cloth district in decline.[2] They were the work of a group of Leiden makers, mostly of Walloon origin, who began about 1630 to manufacture a new kind of camlet, not unlike says. It was made partly of camel hair (Turkish yarn) or goats' hair, later mixed with wool or silk.[3] These 'Leiden Turks', as they came to be known, swiftly established a large market in both Northern and Southern Europe, and they sold especially well in France. Their main use was for men's clothing. With the camlet, Leiden had lighted on a worsted type of fabric, to the raw materials for which she had access at least as good as, if not better than, the English, and selling in markets where the Dutch were not worse burdened than their rivals. Little wonder that the English cast envious eyes on the camlet business. Sir George Downing, plotting as always for a favourable balance of trade and a greater volume of employment, wrote to the Lord Chancellor, Clarendon, from the Hague early in 1664: 'I have this day given a pass to an Englishman to goe for England, who is a weaver of camlotts and moohaires. He tells me yt. there are at least 500 weavers of such kind of stuffs and such as work under ym, yt are gone from yt place for want of worke within these 2 months, some for England, and others for other parts –' [4] Evidently the slump was but temporary. The English manufacturers do not seem to have succeeded in producing a competitive product, at any rate for some time.[5]

For all that has been said about the greater saleability of the new fabrics in semi-tropical areas, Leiden woollens enjoyed wide markets in the Mediterranean and Levant, and even in Africa and the Caribbean.[6] Only the English market was virtually closed to them by a tariff of ten shillings a yard. This the Leiden manufacturers regarded as intolerably high, and it remained a constant source of indignation.[7] The rising production of fine woollens at Leiden was based on the steady supply of Spanish wool that gradually became available after the Truce. Of the total quantities of wool imported into the Republic to supplement home production, it appears that in the second half of the century roughly four-fifths came from Spain. Indeed, as well informed a technical writer as de la Court (himself a Leiden clothier) thought that the Dutch entirely monopolized the Spanish wool supply, to the detriment of the English woollens industry. Significantly, this supply began to assume real proportions in the 1620's, about the same time as the Leiden woollen industry proper began its remarkable seventeenth century renaissance. The vital character of Spanish wool to the growing *lakenindustrie* explains the full significance of a scheme that appeared on the eve of the First Dutch War. The English author (or authors) of *Considerations of the Advantages to the Commonwealth of England, by getting all the Spanish Cloth wools into English Hands – etc.* (1651) saw that while the ban on the export of wool from England might embarrass some branches of Dutch industry, it did nothing to hinder the most valuable of all: the fine woollens. The Spanish wool supply blunted the edge of English strategy by providing the basis for the most valuable of all the Leiden industries. As part of the economic warfare strategy of England, therefore, there should be established a private company to pre-empt all the wools of Segovia and Castile.[1] Nothing, so far as is known, came of the idea, but a similar scheme was revived in 1661–2 when another slump descended on the English cloth industry while its Dutch rivals were said to be enjoying a boom.[2]

---

[1] The cheaper 'natural' says of Leiden known as *monnikensaaien* went largely to the Carmelite monasteries of Italy. Compare Defoe, *A Plan of the English Commerce* (Edn. 1928), p. 138: 'In Italy the clergy wore black Bays, the Nuns were vail'd with fine says and Long Ells'. By this time they were English worsteds.

[2] J. H. Clapham, *Concise Economic History* (1949), p. 242.

[3] *Bronnen*, Vol. IV, No. 223. See also Posthumus, *op. cit.* pp. 272–9.

[4] Downing-Clarendon, The Hague, 14 Feb. 1664. O.S. T. H. Lister, *Life and Administration of Edward, First Earl of Clarendon* (1837), Vol. III, 361.

[5] The author of *Englands Advocate* (1699) says that England had 'before the War' replaced the former import trade in 'Hair Camblets' from Brussels and Holland by English manufactures and was exporting them to France too (p. 11).

[6] Posthumus, *op. cit.* p. 825. It is possible to exaggerate the relationship of woollens to Northern markets and worsteds to Southern. The sale of callimancoes in Russia has been mentioned above.

[7] *Bronnen*, No. 29.

Evidently the success of both woollens and camlets at Leiden was closely related to raw material supply; in the first case, Spanish, in the second, Turkish, wool. The industries concerned ran only one risk – insecurity in war time, and that had to be accepted.[3] The progress of the *laken industrie* was related also to the notable advances made by experimenters like Cornelius Drebbel and Kepler, his son-in-law, in the arts of dyeing with indigo and cochineal. Here as elsewhere the mercantile and technological precocity of the Dutch went hand in hand. (It was no accident that colonial textile dyes were amongst the first articles of trade to be 'enumerated' under the Navigation Acts of the Restoration.) The result was, in the case of camlets and woollens, two commodities of high value and quality which stood up to foreign competition better than the cheaper varieties, where the high ratio of labour costs to raw material costs put Leiden at a disadvantage.[4] A quality *laken*, dyed and finished, would sell at anything from 5½ to 12½ guilders per ell. The next most valuable type was the camlet, at perhaps half this price. A say was not worth more than a third of the price of a camlet. Bays fetched a little more. Fustians were only worth half the price of says.

---

[1] J. Thurloe, *A Collection of State Papers* (1742), Vol. 1, 200.

[2] *State Papers Domestic*, July 30, *Calendar 1661–2*, p. 449. As so often happened the Dutch held quite a different view of their condition which they regarded as unprecedentedly depressed. *Bronnen*, Vol. V, *passim*. A later proposal to revive the pre-emption of Spanish wool appears in *A Treatise of Wool and Cattle* (1677). Smith, printing it in *Memoirs of Wool* (1747) (Vol. I, 311), dismisses it as 'wild and weak'.

[3] Downing wrote from the Hague to Clarendon: '. . . . their grogrim yarne, by reason of the sinking of ye ship *King Solomon*, and the stop of ye rest of their Smirna fleete from Cadix, is risen within this month 24 stuivers a pound, which is a mighty rise. He saith also, yt, the sayd weavers doe complain infinitely yt their trade is lost; and yt in a little time, if this warre goes on and y ye Turky yarne and Spanish wooles be kept from coming in hither yt will be but a very thin towne' (14 Feb. 1664. O.S. *Lister, ibid.*)

[4] The author of the proposals for pre-empting Spanish wool (Thurloe, *ibid.*) has an illuminating passage on the nature of competition for the fine cloth market. 'One Pound of English Wool of 12d price, is improved in a mixed [English] Cloth to 4s. so as ¾ of its value is merely made out of the Labour, and that Labour of Carding, Spinning, Dying, Weaving, Fulling and Working, does not cost us above ½ of what the *Hollander* pays, by reason of their high rates of Houses and Victuals, to which all Labourers' Wages are proportioned. But now, in fine *Spanish* wool that costs three times as much as our *ordinary* English *Wool*, that Advantage in the Labour doth not hold for us; nor can the most judicious Eye guess so near the true worth of fine Cloth, but that the Maker may at most times advance 10 *per Cent.* on the Fancy of the Buyer, which on coarse Cloths cannot be done; and therefore they paying no Import or Excise on the Manufacture, from the Sheep's Back to their own; and ours paying Customs here, and freight and Insurance thither, and a great Excise there, we cannot recover the Vent of our fine Cloth in *Holland*, (if we should be reconciled) nor in other Parts, nor get our Workmen home, but by keeping the *Hollander* from Spanish Wools.' The effect of taxation – excise especially – in raising wages and thereby costs, remains to be investigated. Contemporaries made much of it.

These prices put a different complexion on the Leiden production figures. While the worsted group produced a large output, its value (always excepting the camlets) was relatively smaller than that of the woollens. The total value of the Leiden industries rose from about 4 million guilders in 1630 to a peak of 9 million guilders in 1654. Thereafter there came a steady fall to 5–6 million guilders in 1700. Taking the peak year values, it becomes clear that fine woollens account for nearly half the total value and camlets for another third. Together they represented 77 per cent of the total. Bays and says together, represented only 16 per cent; fustians, arras etc. the remainder. Thus the two branches mostly closely linked to fine imported materials and the most skilled techniques represented an economic activity of much greater value than might be deduced from the production figures. In 1655, camlets and woollens accounted for less than half the total pieces produced (some 50,000 out of 106,000) but they represented more than three quarters of the total value of Leiden's production.

The high values of fine woollens and camlets, associated with high quality, help to explain why these types of cloth maintained their position better than cheaper types. Under pressure from English competitors, operating at lower costs both of material and labour, prices of Leiden cheaper worsteds dropped to a point where Leiden manufacturers could no longer compete. The conditions of English rural cottage industry, where part-time wages were low and labour easily stood off in slack times, placed the English clothier at a distinct advantage in the cheaper lines. In the pure woollens and camlet markets, on the other hand, profit margins were higher, the high wage costs of an urban labour force more easily absorbed, and it seems as if the English manufacturers found it difficult to offer a competitive article. Perhaps this was partly because their access to the special imported raw material supplies required was less good: English writers were apt to stress the advantage that Dutch buyers overseas enjoyed in such matters by reason of the easier credit and lower interest rates on borrowed capital available in Holland.[1] In turn, the high cash value of the Dutch trade in fine cloths made of Spanish wool may help to explain the vigour with which the Dutch reacted to the import of the Wiltshire Spanish cloths.[2]

The end of the seventeenth century found the major part of the woollen cloth supply to world markets still in the hands of the English and Dutch clothiers. Their combined competition in Southern European markets had finally despatched an Italian industry structurally ossified, its enterprise and competitive power paralysed by the dead hand of local gild regulation.[3] The French were trying to break into the Levant trade with the medium quality ranges of Languedoc manufactures (where they were to do well in the eighteenth century) but their threat was not yet serious.[4] Downing could speak in the 1660's of a danger that Silesia might monopolize the coarse cloth trade while Holland would make the fine, and England would be driven back to her old status of wool producer;[5] but this was largely the language of rhetoric. Some growth of cheap textile manufactures in East Europe there certainly had been, and this, combined with the currency problem,[1] probably created difficulties for both English and Dutch exporters. The 'broad lists' of Yorkshire – a cheap and inferior kersey – were one casualty.[2] Leiden fustians probably another. The local manufacture of cheap says in France later in the century found other victims. But Anglo-Dutch competition remained, it would appear, the major force shaping the new division of markets. Caught in a vice between inexorably rising costs and inexorably falling prices, the major part of the Leiden worsted group making cheaper lines slowly gave up the struggle. In face of English competition, their earlier advantages in raw materials and technical skills disappeared. Only the more costly camlets and woollens survived to maintain Leiden's reputation for quality. Changes of taste and fashion may have helped here, while hastening the decline of the cheaper worsteds.[3] The result was that, in a world of falling prices, Leiden's total production at the end of the century was valued at some 5–6 million guilders, or not more than 60–70 per cent of the figure of half a century earlier. The next half century was to see a general decline. Leiden was a dying city, and against its losses could be set no countervailing growth of textile finishing industries at Amsterdam or elsewhere.[4] Industrial decline was general, and to this many factors contributed, including high costs that derived from heavy taxation on food and necessities, and the failure to devise a satisfactory tariff policy. A large volume of British exports, including cloth, continued to find its way to world markets *via* the Dutch entrepôt, though with the slow spread of the skills in the English dyeing and finishing trades, the Dutch function became increasingly restricted to one of distribution. An increasing percentage of the West Country serges, Norwich stuffs and Yorkshire kerseys, shaloons and camlets found their way to their customers by direct routes.[5] Whatever may have been the 'selling points' of the worsted types of cloth that commended them to Southern buyers in 1600, they were now finding a large market amongst the more sophisticated urban middle classes and rural gentry of Western Europe.

---

[1] Josiah Child, *A New Discourse of Trade* (1694), pp. 22, 23, 51, 52. Roger Coke, Barbon and Davenant all make similar points.

[2] Above, p. 212.

[3] Sella, *op.cit.*

[4] R. Paris, *Histoire du Commerce de Marseille 1660–1789* (Le Levant) (1957), pp. 543–545 and Cinquième Partie, Ch. II. *passim.*

[5] Thurloe, *op. cit.* Vol. VII, p. 848.

It seems probable that the competition of Leiden's fine woollens was sufficiently obstinate and protracted to underline the attractions of the worsted market to an English woollen industry whose ancient advantage in point of fine wool supply had long since disappeared. The new threat which developed steadily from 1660 onwards to Europe's woollen industries generally came not from traditional types of woollen and worsted manufactures but from oriental textiles imported in increasing quantities by the great trading companies and swiftly imitated by local manufacturers. Thus the European textile industries entered the latest phase of the long transition from fairly uniform, heavy, costly woollen fabrics to lighter, brighter, and markedly cheaper fabrics of mixed materials. The details of this changing pattern of consumption still need far more attention than they have yet received.

[1] See B. E. Supple, 'Currency and Commerce in the Early 17th Century', *Economic Hist. Rev.* 2nd Series, Vol. X, No. 2 (1957).

[2] Coke *MSS.* 1. 465 (1632). See Heaton, *op. cit.* pp. 193, 198.

[3] Posthumus, *op. cit.* (p. 928) speaks of the 'declining demand for says in spite of new processes of manufacture'. The contemporary P. de la Court said that many of the New Drapery products had 'fallen into disuse'. *Welvaren van Leyden* (ed. Driessen), Ch. VI.

[4] H. Brugmans, *Opkomst en Bloei van Amsterdam* (1944), pp. 219–220.

[5] *Archief Brants* (Fol. 403. Gemeente Archief, Amsterdam) contains much evidence of the growth in direct trade between Exeter, Topsham and Spain and Hamburg. See the correspondence David Leeuw – George Poe, John Elwill. The decline in serges was, it seems, partly a question of fashion. See also Hoskins, *op. cit.* pp. 74–8.

In the third decade of the eighteenth century, Defoe sat down to confound the pessimists who mistook the misfortunes of one part of industry and trade for the decline of the whole. The characteristic of the woollen textiles trades, he declared, was '. . . . that if one Place sinks, another rises; and if one kind of Manufacture declines, another advances'.[1] Defoe's habit of remedying his shortage of statistics by liberal use of the imagination does not always make him a reliable guide, but here his comment seems perfectly valid. During the preceding century, the pattern of the cloth trade and manufacture had been not fixed but kaleidoscopic. It was determined not by one factor but by many interdependent ones including raw material supply, the vagaries of fashion, the exigencies of climate and the forces of social change. In the contests for world markets that ensued, much depended on the degree of flexibility that an industry could achieve in adapting itself to changing demand. Costs of production varied between one area and another, between – especially – urban and rural industries. So long as defence costs remained high in Holland, so did wages and costs of production. Equally, English Government could do little directly to reduce the cost of loan capital to the entrepreneur, however much Restoration publicists might propose and counter-propose. They could, on the other hand, manipulate economic conditions to a debateable extent through protective tariffs, subsidies and raw material controls. In a situation where 'natural' advantages and disadvantages were pretty evenly distributed, the kind of intervention urged by writers from Mun to Downing may well have had an important influence on the pattern of cloth production in both Holland and England. It is difficult to avoid the conclusion that their generally weaker position compelled the Dutch to concentrate on products based on wools from Spanish, Turkish and local sources and to exploit those markets where such products were saleable.

Jesus College, Cambridge

---

[1] D. Defoe, *A Plan of the English Commerce* (1928 Edn. Oxford following the 1728 Edn.), p. 188.

SCIENCE AND INDUSTRY IN THE LATE EIGHTEENTH CENTURY[1]

by A. E. MUSSON AND E. ROBINSON

It is a deeply entrenched tradition that the technical achievements of the early Industrial Revolution were the products of uneducated empiricism.[2] It is gradually becoming evident, however, that the Industrial Revolution was not unrelated to the Scientific Revolution, which became so marked in Restoration England, with the founding of the Royal Society and the great discoveries of Newton and Boyle, and which was developed in the later eighteenth century by such as Priestley, Black, Cavendish, and Herschel.[3] James Keir, F.R.S., the famous industrial chemist, declared in his *Dictionary of Chemistry* (1789):

> 'The diffusion of a general knowledge, and of a taste for science, over all classes of men, in every nation of Europe, or of European origin, seems to be the characteristic feature of the present age'.[4]

And the *Philosophical Magazine* referred in 1798 to the 'well known' fact that 'the Arts and Manufactures of Great Britain .... have been much improved by the great Progress that has lately been made in the various Branches of the Philosophical Sciences.'[5]

Professor Ashton has already suggested that collaboration between men of science and of industry, in societies such as the Literary and Philosophical Society in Manchester and the Lunar Society in Birmingham, was an important factor in the Industrial Revolution.[6] It is clear that outstanding figures like Boulton, Watt, and Wedgwood were men of considerable intellectual and scientific as well as technical and commercial ability. Other important industrialists such as John Kennedy of Manchester, the Strutts of Derby, and Thomas Bentley of Liverpool were also members of their local philosophical societies and were not strangers to liberal conversation and intellectual pursuits.[7] In recent years historians of education have done much to illuminate this question and their findings have suggested that a knowledge of science was more widely diffused through industrial society than has hitherto been suspected.[1] In this paper we shall make a detailed examination of the relationship between science and industry in Manchester – centre of the most rapid and important technical advances in the late eighteenth century – and then make a briefer general survey of the situation in other industrial centres.

---

[1] Based on a paper read on 3 April 1960 at the annual conference of the Economic History Society.

[2] This view has been reiterated recently in R. Mousnier, *Progrès Scientifique et Technique au XVIIIe Siècle* (Paris, 1957), a work based almost entirely on secondary sources, with little new evidence. For a very critical review of this book, see *Annales Historiques de la Révolution Française*, Oct.–Dec. 1959, pp. 376–82.

[3] See, for example, G. N. Clark, *Science and Social Welfare in the Age of Newton* (1938); A. Wolf, *A History of Science, Technology and Philosophy in the Eighteenth Century* (1938); A. Ferguson (ed.), *Natural Philosophy through the 18th Century* (commemoration number of the *Philosophical Magazine*, 1948); J. D. Bernal, *Science in History* (1954); A. R. Hall, *The Scientific Revolution, 1500–1800* (1954); A. and N. L. Clow, *The Chemical Revolution* (1952).

[4] *Op. cit.* Preface, p. iii.

[5] *Op. cit.* I (1798), Preface.

[6] T. S. Ashton, *The Industrial Revolution, 1760–1830* (1948), pp. 16 and 20–21.

[7] See R. Angus Smith, *A Centenary of Science in Manchester* (1883); R. B. [Richard Bentley], *Thomas Bentley, 1730–1780* (Guildford, 1927); and Eric Robinson, 'The Derby Philosophical Society', *Annals of Science*, IX (1953), 359–367.

I

When the Scientific Revolution began in the seventeenth century it was principally a metropolitan movement centred on the Royal Society. By the end of the eighteenth century it was largely a provincial movement, healthily expressed through the many philosophical societies in Norwich, Northampton, Exeter, Bristol, Bath, Plymouth, Birmingham, Derby, Manchester and many other places. The preface to the first volume of the Manchester Literary and Philosophical Society's *Memoirs* pointed out the utilitarian as well as the scientific value of these learned societies. Those founded in different parts of Europe in the seventeenth and eighteenth centuries had 'been not only the means of diffusing knowledge more extensively, but have contributed to produce a greater number of important discoveries, than have been effected in any other equal space of time'. Their journals had publicized 'many very valuable discoveries, or improvements in arts, and much useful information in the various branches of science'. But although several French provincial societies had been instituted, 'in England, they have almost been confined to the Capital'. It was therefore urged that 'the promotion of arts and sciences' would be 'more widely extended by the forming of Societies, with similar views, in the principal towns of this kingdom'.[2]

The Manchester Society was founded in 1781, growing out of informal meetings, which had been held for some years previously, of 'a few Gentlemen, inhabitants of the town, who were inspired with a taste for Literature and Philosophy', and who had 'formed themselves into a kind of weekly club, for the purpose of conversing on subjects of that nature'.[3] These meetings had first been held in the house of Dr Thomas Percival,[4] the leading figure in the Society's foundation and later its president for many years. Its subjects of conversation were to include 'Natural Philosophy, Theoretical and Experimental Chemistry, Polite Literature, Civil Law, General Politics, Commerce, and the Arts' [manufactures].[5] The medical profession was strongly represented in its membership and a few clergy also participated, but 'the great majority of the members were either engaged or interested in the extension of Science and Art to manufacturing purposes'.[6]

---

[1] E.g. N. Hans, *New Trends in Eighteenth Century Education* (1951); W. H. G. Armytage, *Civic Universities* (1955); T. Kelly, *George Birkbeck* (Liverpool, 1957); B. Simon, *Studies in the History of Education 1780–1870* (1960).

[2] *Memoirs of the Manchester Literary and Philosophical Society*, I (1785), v–vi. Erasmus Darwin's *Address to the First Meeting of the Literary Society at Derby, July 18, 1784* (Derby Public Library) makes the same kind of case.

[3] *Manchester Lit. & Phil. Memoirs*, I (1785), vii. There is no modern history of the Society, but see Angus Smith, *op. cit.* and F. Nicholson, 'The Literary and Philosophical Society, 1781–1851,' *Manchester Lit. and Phil. Memoirs*, LXVIII (1923–24), 97–148. The Society was strongly influenced by Warrington Academy, several of its leading members, such as Thomas Percival and Thomas Barnes, being Warrington *alumni*. See H. McLachlan, *Warrington Academy: Its History and Influence* (Manchester, 1943), pp. 114–28.

[4] E. Percival, *Memoirs of the Life and Writings of Thomas Percival, M. D.* (1807), p. lxvii.

[5] *Manchester Lit. and Phil. Memoirs*, I (1785), xii–xiii.

[6] A. A. Mumford, *The Manchester Grammar School 1515–1915* (1919), p. 218. This statement is borne out by the membership lists in the *Memoirs*.

The attempt to build up a provincial culture based on the study of modern science was undertaken in a spirit of both utility and idealism. Thomas Henry pointed out in Manchester that 'several branches of Natural Philosophy seem peculiarly adapted to fill up the vacant hours in which the tradesman can withdraw from his employments. A general knowledge of all will tend to open and enlarge his understanding .... While the study of some, *in particular* [such as mechanics, hydrostatics, hydraulics, and chemistry], may .... supply him with a kind of information which he may turn to good account ....' [1] In a similar mood the Rev. Thomas Barnes expressed the hope that 'the happy art might be learned, of Connecting together, Liberal Science and Commercial Industry'.[2] It is clear, however, from remarks by both Henry and Barnes that there was considerable antipathy among tradesmen in Manchester to liberal education, but this antipathy was being combatted. It is true that Thomas Henry was an apothecary and that Barnes was a religious minister, but a large number of their fellow members were men of business. John Barrow, John Drinkwater, the Philips, George Walker and John Wilson as well as several others were engaged in trade.

The dividing line between professional man and manufacturer was not so marked then as it is today. Thomas Henry, F.R.S., an apothecary, developed into a manufacturing chemist, and though he trained his sons as doctors brought them into business alongside him. James Dinwiddie, A.M., lecturer in natural philosophy, appears to have entered the calico-printing business.[3] Thomas Cooper, who failed to become a F.R.S. though his certificate was signed by Priestley and Watt, contributed his chemical knowledge to the bleaching firm of Baker and Cooper. Charles Taylor, the Manchester dyer, became Secretary to the Society for the Encouragement of Arts, Commerce and Manufactures.[4] Men of chemical knowledge quickly put it to practical test in the bleaching and dyeing trades.[5] The result was that in the Manchester Literary and Philosophical Society there was from the beginning an easy exchange of opinion, and in its rooms a manufacturer could consult with half-a-dozen Fellows of the Royal Society among the Manchester members, without taking the Corresponding Members into account. In the very first published list of members the names of Charles White, Thomas Henry, Thomas Butterworth Bayley, and Thomas Percival appear, all of whom were Fellows of the Royal Society,[6] and there were more to come in a few years.

As a result of the papers read to the Manchester Literary and Philosophical Society by Thomas Henry and the Rev. Thomas Barnes, it was decided to establish a 'College of Arts and Sciences' in Manchester in 1783, apparently the first institution of its kind in the country.[1] Barnes was the chief architect of this scheme. He stressed the great need for an institution of higher education, after elementary tuition at private or grammar schools. Here young tradesmen would be able to study '*Natural Philosophy*, the *Belles Lettres*, and *Mathematics*; together with some attention to *History*, *Law*, *Commerce*, and *Ethics*'. The course on Natural Philosophy 'should pay a very particular attention to CHEMISTRY and MECHANICS because of their intimate connection with our manufactures'.[2] This scheme was supported by the Literary and Philosophical Society.[3] It was 'principally accommodated to young men designed for a respectable line of *trade*', but would also provide a general education for those entering the professions. Lectures would be given in the evenings, 'so as not to interfere with the regular hours of business'. Those on natural philosophy would be illustrated by experiments on fire-engines, air-pumps, microscopes, etc., while the chemical lectures would have 'a reference to the arts of *Dyeing*, *Bleaching*, &c. which, depending upon chemical principles, might probably, by the knowledge of those principles, be very greatly extended and improved'.

---

[1] Thomas Henry, 'On the Advantages of Literature and Philosophy in General, and especially on the consistency of Literary and Philosophical with Commercial Pursuits', read October 3, 1781, *Manchester Lit. and Phil. Memoirs*, I (1785), 7–29.

[2] Thomas Barnes, 'A Plan for the Improvement and Extension of Liberal Education in Manchester', read April 9, 1783, *Manchester Lit. and Phil. Memoirs*, II (1785), 16–29. See also his paper, 'On the Affinity subsisting between the Arts, with a Plan for promoting and extending Manufactures by Encouraging those Arts, on which Manufactures principally depend', read January 9, 1782, *Manchester Lit. and Phil. Memoirs*, I (1785), 72-89.

[3] *Manchester Mercury*, 22 November and 6 December 1796. (Advt. re bankruptcy of Messrs. Dinwiddie and Bewicke.)

[4] Sir Henry Trueman Wood, *A History of the Royal Society of Arts* (1913), 334–35.

[5] We have found so much evidence of this that we propose to publish shortly another paper on applied chemistry in the Lancashire cotton industry during this period. Thomas Henry, F.R.S., was especially important in this field.

[6] *Manchester Lit. & Phil. Memoirs*, I (1783), xvi–xvii.

The 'College of Arts and Sciences' was instituted at Manchester on 6 June 1783.[4] Its president, Thomas Percival, and eight governors were all members of the Literary and Philosophical Society, and so were all the lecturers: Henry Clarke on Practical Mathematics, Natural and Experimental Philosophy, and Geography; Thomas Henry on Chemistry with reference to Arts and Manufactures; George Bew on the Theory and History of the Fine Arts; and the Rev. Thomas Barnes on the Origins, History, and Progress of Arts, Manufactures and Commerce, Commercial Law, etc. But the College – started with such high hopes – had a brief existence, lasting only until 1787–8.[5] The most successful of the science lectures, 'delivered .... to numerous and attentive audiences', were those of Thomas Henry on chemistry, which included 'a course on the Arts of Bleaching, Dyeing, and Calico-Printing; and to render this course more extensively useful, the terms of access to it were made easy to the superior class of operative artisans'.[6] John Banks also lectured at the college on natural philosophy.[7] Charles White, F.R.S., and his son Thomas White, M.D., delivered lectures on anatomy.[8] The causes of the College's demise are not clear, but are said to have included 'a superstitious dread of the tendency of science to unfit young men for the ordinary details of business'.[9]

---

[1] In addition to the papers of Henry and Barnes, previously cited, see the first report of the College, 'College of Arts and Sciences, Instituted at Manchester, June VI, MDCCLXXXIII' (Manchester Central Reference Library, S. & A. 94/42. Reprinted in *Manchester Lit. & Phil. Memoirs*, II (1785), 42–46); *Manchester Mercury*, 29 July, 30 Sept. 1783; E. Percival, *op.cit.* pp. lxx–lxxi; W. C. Henry, 'A Tribute to the Memory of the Late President [Thomas Henry] of the Literary and Philosophical Society of Manchester', *Manchester Lit. & Phil. Memoirs*, 2nd ser. III (1819), 224–6. There are brief accounts of the College in R. Angus Smith, *op. cit.* pp. 104 ff.; J. Thompson, *The Owens College* (1886), pp. 7–10; W. Bowden, *Industrial Society in England towards the end of the Eighteenth Century* (New York, 1925), pp. 45–6; H. McLachlan, *op. cit.* p. 123.

[2] *Manchester Lit. & Phil. Memoirs*, II (1785), 22.

[3] *Ibid.* 29–41.

[4] *Manchester Mercury*, 29 July 1783, and the College's first annual report, cited above.

[5] *Manchester Mercury*, 28 August, 25 September, 2 October 1787. James Watt junior attended lectures by Charles White as late as December 1788. J. Watt, jun., to J. Watt, 7 December 1788. Doldowlod MS. Cf. Percival, *op. cit.* p. lxxi.

[6] W. C. Henry, *op. cit.* p. 226. Thomas Henry continued his lectures 'long after' the College's collapse.

[7] See below, pp. 232–3.

[8] *Manchester Mercury*, 10 and 31 October 1786. See also 'A Discourse delivered at the Commencement of the Manchester Academy, September XIV, MDCCLXXXVI. By Thomas Barnes, D.D.', p. 25.

[9] W. C. Henry, *op. cit.* p. 225.

The College of Arts and Sciences was a non-denominational institution which has sometimes been confused with the Manchester Academy, or 'New College', forerunner of the modern Manchester College, Oxford, founded by local Dissenters on 22 February and opened on 14 September 1786.[1] The Manchester Academy was formed in order to save something from the wreckage of the Warrington Academy.[2] Hackney College, London, received the scientific equipment from Warrington, while the library, of about 3,000 volumes, was inherited by Manchester Academy. The most important figures in the promotion of the Manchester Academy were Thomas Percival, president of the Literary and Philosophical Society, Dr Thomas Barnes, co-secretary of that society, and the Rev. Ralph Harrison, another member. These three, however, involved the Society too far in the projected academy, especially by their suggestion in the trustees' first report that the Literary and Philosophical Society supported the foundation of the new college. On 15 March 1786, in a statement signed by Thomas Barnes and Thomas Henry as secretaries, the Society, *as such*, declared its independence of the Manchester Academy on the grounds that it had always maintained its independence of any religious opinion or sect.[3] Nevertheless individual members of the Literary and Philosophical Society continued to be prominent in the Manchester Academy. Barnes and Harrison were appointed professors of theological and classical studies and were to be responsible for choosing a professor of mathematics and natural philosophy. Most of the officers and committee were members of the Literary and Philosophical Society. Many of the founder members were also former pupils of Warrington Academy or other dissenting academies.

The main purpose of the Academy was to train candidates for the Dissenting ministry, but it would also prepare students who wished to enter the medical and legal professions and give a general education to those 'designed for Civil and Commercial life'.[4] In regard to the third category, Barnes proceeded to 'imagine .... a system of education, for a commercial man, which shall contain all the parts of science proper for him to know, as much as possible in a practical form'. The first tutor in mathematics and natural philosophy at the Academy was Thomas Davies, appointed 1787, followed in 1789 by Francis Nicholls. He was succeeded in 1793 by the famous scientist, John

---

[1] Examples of this confusion are in Hans, *op. cit.* p. 159 and E. Halevy, *History of the English People in the Nineteenth Century* (revd. ed. 1949), I, 561.

[2] See the trustees' report on its institution, 22 Feb. 1786 (Manchester Central Reference Library, S. & A. 94/48), which is reprinted, together with later reports, in a booklet devoted mainly to two sermons on the Academy by Dr Thomas Barnes and the Rev. Ralph Harrison, ministers at Cross Street Chapel, Manchester. (Volume entitled *Manchester Academy* in Manchester Cen. Ref. Lib., ref. no. 378.42/H2.) These sermons were 'A Sermon Preached at the Dissenting Chapel in Cross Street, Manchester, March XXVI, MDCCLXXXVI, on the Occasion of the Establishment of an Academy in that Town. By Ralph Harrison', and 'A Discourse delivered at the Commencement of the Manchester Academy, September XIV, MDCCLXXXVI. By Thomas Barnes, D.D.' The latter was reprinted in 1879 under the ambiguous title *Free Teaching and Free Learning in 1786* (Manchester, 1879.) See also *Manchester Mercury*, 21 March, 18 July, 12 Sept. 1786, 3 April 1787, 16 Dec. 1788, 6 July 1790; *The Monthly Magazine*, IV (July–Dec. 1797), 105–7, containing a report of 'the Academical Institution, or New College, at Manchester', reprinted in J. Harland, *Collectanea Relating to Manchester and Its Neighbourhood* (Manchester, 1867); E. Percival, *op. cit.* pp. lxxvii–lxxxi; F. Nicholson, *op. cit.* p. 140; R. Wade, *The Rise of Nonconformity in Manchester* (Manchester, 1880), pp. 148–9; McLachlan, *op. cit.* pp. 119–20, 128–37, and *English Education under the Test Acts* (Manchester, 1931), pp. 255–62. There is a good modern history of the Academy by V. D. Davis, *A History of Manchester College* (1932), but this shows little appreciation of the Academy's early significance as a training ground for industry and trade.

[3] *Manchester Mercury*, 18 July 1786; Nicholson, *op. cit.* p. 140; McLachlan, *op. cit.* pp. 119–20.

[4] Barnes's 'Discourse'.

Dalton, who had previously been running a school at Kendal.[1] In 1794, when Dalton became a member of the Literary and Philosophical Society, he is said to have had twenty-four pupils for mathematics, mechanics, geometry, algebra, bookkeeping, natural philosophy, and chemistry.[2] He left the Academy in 1800, to engage in private teaching. In that year he was elected secretary of the Literary and Philosophical Society, by which time he had begun to publish important scientific papers.

When Barnes resigned as principal of the Academy in 1798, he was succeeded by George Walker, F.R.S.,[3] who had been a student at Kendal Academy under Caleb Rotheram,[4] then at Edinburgh and Glasgow Universities. He had been a tutor in mathematics and natural philosophy at Warrington Academy in 1772–4, after which he became minister of High Pavement Chapel, Nottingham. A distinguished mathematician as well as theologian, he was elected president of the Manchester Literary and Philosophical Society on Percival's death in 1804.

Up to Barnes's retirement in 1798, the total number of students who had entered the Academy was 137,[5] of whom 89 were destined for commerce and industry. Even before Barnes's resignation, however, the Academy was in difficulties, which finally resulted in its transference to York in 1804.

II

Some impression of the intellectual life available to a young businessman in Manchester in the late eighteenth century can be seen from the correspondence of James Watt junior, though it must be admitted that he was a rather exceptional individual. He was apprenticed to the firm of Maxwell and Taylor, fustian manufacturers and dyers; the Taylor was Charles Taylor to whom we have already referred.[6] The introduction to this firm in 1788 seems to have been made in the first place by Thomas Henry who had been corresponding with Watt about bleaching. In a short while the young Watt struck up friendships with Thomas Henry's sons, with Joseph Priestley junior, who was also working in Manchester, with John Ferriar, an assistant of Thomas Percival, with Thomas Cooper, the bleacher, and with the merchants, Thomas and Richard Walker. By November 1788 he was attending meetings of the Literary and Philosophical Society, and read extracts from his translation of a German treatise by Professor Winterl [7] even before he was made a member, in February 1789.[8] He was also encouraged by James Keir in his translation of a work by Christophe Meiners, Professor of Philosophy at Göttingen,[1] and he was visited by several foreign scientists while in Manchester. At this time he helped Keir with an article on bleaching for his *Dictionary of Chemistry* (1789), to which his master, Charles Taylor, also contributed articles on cotton dyeing and calico printing.[2]

---

[1] On Dalton see W. C. Henry, *Memoirs of the Life and Scientific Researches of John Dalton* (1854); R. Angus Smith, 'Memoir of John Dalton, and History of the Atomic Theory', *Manchester Lit. & Phil. Memoirs*, 2nd ser. XIII (1856); H. Lonsdale, *John Dalton* (1874); H. E. Roscoe, *John Dalton* (1901); J. P. Millington, *John Dalton* (1906); H. McLachlan, 'John Dalton and Manchester (1793–1844)', *Manchester Lit. & Phil. Memoirs*, LXXXVI (1943–45), 165–77; F. Greenaway, 'The Biographical Approach to John Dalton', *ibid.* (1958–59), 1–98.

[2] R. Angus Smith, 'Memoir of John Dalton', p. 18.

[3] Davis, *op. cit.* pp. 67–9.

[4] On Kendal Academy and the Rotherams, see below, p. 231.

[5] *Roll of Students entered at the Manchester Academy* (Manchester, 1868); Percival, *op. cit.* p. lxxxi; McLachlan, *Warrington Academy*, pp. 136–7. Davis, *op. cit.* p. 62, followed by McLachlan, 'John Dalton and Manchester', p. 171, gives 135, but appears to have overlooked two students at the end of the official *Roll.*

[6] See above, p. 224.

[7] James Watt, junior (Manchester) to James Watt (Birmingham), 27 November 1788 and 7 December 1788, Doldowlod MS. (Dol.)

[8] James Watt, junior (Manchester) to James Watt (Birmingham), 24 February 1789, Dol.

In 1789 Watt junior was appointed joint secretary of the Literary and Philosophical Society with John Ferriar. Part of the society's programme was to establish relationships with foreign scientists and scientific societies. Presumably with this aim in view, Watt wrote a letter of congratulation to the famous German scientist and editor, Lorenz Crell, and at the same time sent him copies of two papers he had published in the *Memoirs* of his own society. Crell accepted the compliments and the papers for publication in his *Annalen* and asked for a regular scientific correspondence to be maintained between himself and the Manchester society.[3] Watt was eventually instrumental in securing Crell's election as a Corresponding Member of the Society.

Apart from establishing connexions with foreign scientists, young Watt did something to bring foreign publications on science and engineering to the knowledge of his Manchester friends. He wrote to his father in 1789, saying: 'I am glad to hear that Messr^{s} Lavoisier, Bertholet & Morveau intend translating Crells Annals it will be doing an essential service to Chemistry & will, I have no doubt, amply repay their trouble. Mr [Charles] Tayler & Mr [Thomas] Henry wish to subscribe for one copy each & Mr [Thomas] Cooper for two, one for himself and one for his partner, Mr[Joseph] Baker. These are all our chemical men here, Dr Percival not professing any partiality to that science ....'[4] On another occasion, George Lee, who had been manager of Drinkwater's mill and later became a partner in the cotton-spinning firm of Philips and Lee, wrote to James Watt junior in Paris:

> 'if in the course of yr travels you meet with any good or curious Books upon Mechanics and it does not incommode you materially I wish you would purchase them upon my Account'.[5]

In the same letter he delivered a message from Peter Ewart, the Manchester millwright, who wanted to buy a copy of '*Architecture Hydraulique par Monsr Porny*'.[6] Even before he left Manchester, Watt had been buying German scientific books for his father. Watt's connexions with Manchester ended for a time in February 1792, when he left for Paris, together with Thomas Cooper, as a delegate of the Manchester Constitutional Society to the Club des Jacobins.

It must not be thought that young men like Watt and Joseph Priestley junior were the only men in Manchester who had contacts with French and German scientists. Charles Taylor described to James Watt, senior, a day he spent in Berthollet's company,[7] and when he applied for the post of secretary to the Society for the Encouragement of Arts, Commerce and Manufactures in 1799 he stated to the committee that he was known to almost all the chemists in

---

[1] James Keir (Smethwick) to James Watt, junior (Manchester), 20 November 1789, A.O.L.B.

[2] *Ibid.* 10 February 1790, A.O.L.B.

[3] Lorenz Crell (Helmstedt) to James Watt, junior (Manchester), 26 January 1790, Dol.

[4] James Watt, junior (Manchester) to James Watt (Birmingham), 1 February 1789, Dol. Taylor, Henry, Cooper, and Baker played leading rôles in the application of chemistry to chlorine bleaching, dyeing, and calico printing in Lancashire.

[5] George Lee (Manchester) to James Watt, junior (Paris), 18 April 1792, M.N., Birmingham Reference Library (B.R.L.).

[6] On Ewart and Lee, see below, pp. 229–30

[7] Charles Taylor (Manchester) to James Watt (Birmingham), 21 June 1789, Dol.

Europe.[1] Thomas Henry, in a paper on dyeing, refers to similar publications by foreign chemists such as d'Apligny, Macquer, Hellot, Berthollet, and many others.[2] In 1776 he translated some of Lavoisier's works, *Essays, Physical and Chemical*, and in 1783 a further selection of the same writer's *Essays on the effects produced by various processes on atmospheric air.* Adam Walker, the Manchester schoolmaster and lecturer, had several friends among French scientists, and Henry Clarke was of international repute.[3] In 1794 John Dalton at the Manchester Academy is said to have been teaching science to his pupils from Lavoisier's *Elements of Chemistry* and the similar work of Chaptal.[4] The *Memoirs* of the Literary and Philosophical Society teem with references to the works of foreign chemists, while the Manchester *Memoirs* were themselves translated into French and German.

It may be felt, however, that our argument has not yet been sufficiently concerned with practical men of business of the sort who must have formed the majority in Manchester's industrial life at this time. Let us examine three such men. The obituary of Thomas C. Hewes (1768–1832), 'a machine maker and general millwright', who settled in Manchester in 1792, describes him as 'a man of science' with 'eminent talents in the various branches of the mechanical art'. He is said to have had 'a valuable knowledge of mechanics in general' and 'a particular acquaintance with hydrostatics' and to have 'studied with most satisfactory results the effects of currents of wind as a means of power'. Hewes planned and erected mills, made mill-gearing and spinning machines, and constructed water-wheels all over the country. He was famous for his improvements to water-wheel machinery, especially for the introduction of the suspension wheel.[5] Such a man evidently had a sound knowledge of the mechanical principles underlying the machines he built.

A rather more celebrated millwright than Hewes was Peter Ewart (1767–1842), a pupil of John Rennie and later an employee of Boulton and Watt, who established himself in Manchester in the 1790's first of all as an engineer and then as a cotton manufacturer. He was specially interested in theoretical mechanics and he was 'sufficiently conversant with mathematics to read with facility most works, which were then the standard authorities in mechanics'. He was 'profoundly learned in all that has reference to steam', both in theory and in practice. He had a close friendship of nearly half a century with John Dalton and published a paper in the *Annals of Philosophy*, vol. VI, on Dalton's 'Theory of Chemical Composition'. He was also a friend of Thomas Henry and one of the executors of his will. He was elected a member of the Manchester Literary and Philosophical Society in 1798 and was a vice-president from 1812 to 1835 when he left the Town. He read several papers to the Society, chiefly on mechanical theory.[6]

George A. Lee (1761–1826), of the great Manchester cotton-spinning firm of Philips and Lee, is said to have been 'imbued with a love of the sciences, and was .... remarkable for the extent and precision of his acquirements in them'. It was for this reason that he was so perceptive of 'the advantages to be derived from applying to useful purposes the great inventions that distinguished the era in which he lived'.[1] The spinning machinery in his mills, constructed under his supervision, was remarkable for its 'correct and excellent workmanship'. He was on friendly terms with James Watt and Matthew Boulton and also with Peter Ewart, and was 'fully sensible of the advantages of the steam engine'. He soon made himself 'master of the abstrusest parts of its theory', with the result that his firm's engines were 'the finest specimens of perfect mechanism'. He was the first to improve on the fire-proof mills of his friend William Strutt, by the employment of cast-iron beams,[2] and he was among the first to employ steam for warming mills. He was friendly with Boulton and Watt's foreman, William Murdoch, whose invention of coal-gas lighting he immediately utilized, Philips and Lee's mill being the first (1805) in Manchester to do so;[3] and he gave Dr William Henry assistance in his chemical researches to improve the process.[4]

---

[1] Sir H. T. Wood, *A History of the Royal Society of Arts* (1913), p. 335.

[2] T. Henry, 'Considerations relative to the Nature of Wool, Silk, and Cotton, as Objects of the Art of Dyeing', *Manchester Lit. & Phil. Memoirs,* III (1790). A translation of the French works mentioned was advertised in the *Manchester Mercury,* 30 June 1789.

[3] For Walker and Clarke, see below, pp. 231–2, 237.

[4] R. Angus Smith, 'Memoir of John Dalton', p. 18. Dr William Henry, of Manchester, also recommended these and other French works in his *Epitome of Chemistry* (1801).

[5] *Manchester Guardian,* 11 February 1832. Hewes had one of the biggest engineering works in the country in 1824, when he gave evidence before the Select Committee on Artizans and Machinery (*Fourth Report*, pp. 340 50). See J. H. Clapham, *An Economic History of Modern Britain* (1939), I, 355. His name is misspelt 'Herves'.

[6] Obituary notice in *Manchester Lit. & Phil. Memoirs,* Second Series, VII (1846).

These men – Hewes, Ewart, and Lee – were among the leading engineers and cotton spinners in Manchester. But even a common engine erector like Isaac Perrins was not an absolutely unlettered man, as is evident from the style in which Boulton and Watt wrote to him: 'From long experience & knowledge of Steam Engines we doubt not but you are fully competent to discriminate between a variation of form & a variation of principle in the construction of an Engine ....' [5] Even the ordinary millwright in the eighteenth century, so William Fairbairn tells us, was generally 'a fair arithmetician, knew something of geometry, levelling, and mensuration, and in some cases possessed a very competent knowledge of practical mathematics. He could calculate the velocities, strength, and power, of machines: could draw in plan and section ....' [6] Indeed, Fairbairn states that millwrights were commonly regarded as men of 'superior attainments and intellectual power': they were by no means unlettered rude mechanics.

III

One is naturally prompted to ask how these men acquired such scientific and technical knowledge. They were undoubtedly influenced to some extent by the itinerant lecturers in natural philosophy who regularly visited the principal towns in the later eighteenth century.[1] In Manchester, for example, men like Caleb Rotheram, master of Kendal Dissenting Academy, and his son, John Rotheram, James Ferguson, James Arden, Adam Walker and his son, of the same name, John Warltire, Henry Moyes, John Banks, Thomas Garnett, Gustavus Katterfelto, and many others gave lectures on science and mechanics, besides those lecturers we have already mentioned in connexion with the College of Arts and Sciences and the Manchester Academy.[2] Most of these lecturers were itinerant. Some of them were nationally famous in their day; others were rather more local figures, but their importance in the general pattern of scientific education has not been generally recognized. Several of them took with them on their tours quite large collections of working models and scientific apparatus. In addition, they usually published their lectures in book form, or if they did not publish the complete lectures, they printed and sold a synopsis of them. Some of the earliest lectures in Manchester on 'experimental philosophy', those delivered in 1743 by Caleb Rotheram, of Kendal Academy, and his son John, are still preserved in manuscript in Chetham's Library.[3] It is worth recalling that one of the greatest engineers of the age, John Wilkinson, was educated at Kendal Academy under Caleb Rotheram, and so were George Walker, principal of the Manchester Academy from 1798 and president of the Manchester Literary and Philosophical Society, 1804–07, and John Banks, one of Manchester's lecturers on science at the College of Arts and Sciences.

---

[1] Obituary notice in *Manchester Guardian*, 12 August 1826 and *Gentleman's Magazine*, n.s. XCVI, pt. ii (July-December 1826), 281–2. Robert Owen described Lee as 'one of the most scientific men of his day'; he had been 'highly educated', and was 'a finished mathematician'. He 'possessed great talent as a scientific machinist and engineer'. He had been manager of Drinkwater's mill, the first Manchester mill (1789) to instal one of Watt's rotary engines. R. Owen, *The Life of Robert Owen. Written by Himself* (1857), I, 26–8, 32. See above, p. 228, for his request to James Watt junior in Paris to acquire for him 'any good or curious Books upon Mechanics'.

[2] The Salford mill of Philips and Lee (1799–1801) was one of the earliest iron-framed buildings. See T. C. Bannister, 'The First Iron-framed Buildings', *Architectural Review*, Vol. 108, April 1950, 231–46; H. R. Johnson and A. W. Skempton, 'William Strutt's Cotton Mills 1793–1812', *Newcomen Soc. Trans.* Vol. 30 (1956), 179–205.

[3] *Philosophical Transactions*, February 1808.

[4] W. Buckley and A. McCulloch, 'A Record of Some Early Experiments on the Carbonisation of Oil and Coal, by Dr. W. Henry, F.R.S. (1808–1824)', *Manchester Lit. & Phil. Memoirs*, LXXIV (1929–30), 69.

[5] Boulton and Watt to Isaac Perrins, 7 January 1795 (should be 1796), Boulton and Watt Letter Book (Office), September 1795 to August 1796, Birmingham Reference Library.

[6] W. Fairbairn, *Treatise on Mills and Millwork* (1861–3), I, v–vi.

One of the most famous itinerant lecturers of the century, Adam Walker (1731–1821),[4] had close connexions with Manchester, where he established a school in January 1762.[5] He is said to have 'conceived a system of education more adapted to a Town of Trade than the Monkish system still continued in our Public Schools'.[6] His ideas were widely approved and 'many of the first people in that town' are said to have benefited from his tuition during the five years (1762–66) which he spent in Manchester. He gave several public lectures there on subjects of natural philosophy, especially on astronomy. Then in 1766 he purchased 'the celebrated Philosophic Apparatus' of another lecturer, a Mr Griffith,[7] and thereafter proceeded to travel throughout the north of England, southern Scotland, and Ireland, lecturing on 'Mechanics, Hydrostatics, Pneumatics, Chemistry; on Optics and Astronomy; and on Magnetism, Electricity, and the general Properties of Matter'.[1] After several years' residence firstly in Ireland and then in York, he established himself as a lecturer in London. He was a friend of Joseph Priestley, Henry Moyes, and other scientists. But he was not merely an academic lecturer, for he had a long string of practical inventions to his credit.[2] He was sufficiently well versed in engineering to be consulted by the Richmond Water Company when they were considering whether to instal a Boulton and Watt engine in 1780,[3] and three years earlier Boulton had even thought it worth while to sign an article of agreement with Walker for an option on one of Walker's inventions.[4] Unfortunately the invention is not described, but we know that Walker invented a steam engine, a drawing of which appears in his published lectures and another in the Boulton and Watt Collection at the Birmingham Reference Library.[5] When he lectured in Birmingham in 1781 he dined with Boulton, who expected that he would 'set people a talking about Engines'.[6] Both Adam Walker and his son lectured frequently in Manchester, where they were clearly held in high esteem. Walker senior published his lectures, which had gone into eight editions by 1792.[7]

---

[1] The influence of these men has been seriously underestimated by economic historians, e.g. W. H. B. Court, *The Rise of the Midland Industries, 1600–1838* (1938), p. 225: 'A sign of this side of the town's [Birmingham's] life was the occasional giving of scientific lectures by visitors, whose qualifications, however, are not always apparent .... The circle of people affected by such lectures would be exceedingly small, the effects on invention probably negligible ....' The best general account of the lecturers is given by N. Hans, *op. cit.* There are also important articles on individual lecturers such as: Douglas McKie, 'Mr. Warltire, a good chymist', *Endeavour*, X (1951), and J. A. Harrison, 'Blind Henry Moyes, "An Excellent Lecturer in Philosophy",' *Annals of Science*, XIII (1957), 109–125. See also D. Layton, 'Newton's Effect on English Thought', *History Today*, VII (1957), 388–95.

[2] We have compiled a long list (omitted here for reasons of space) from the *Manchester Mercury*, which shows that almost every year for the last forty years of the eighteenth century Manchester was visited by one and sometimes by several of these lecturers. Each usually gave a course, occasionally two courses, of lectures, numbering sometimes as many as thirty, spread over several weeks or even months.

[3] Chetham's Library, Mun. A. 2.68, and Mun. A. 2.81.

[4] For accounts of Walker's life see *European Magazine, and London Review*, XXI (Jan.-June 1792), 411–3; *Gentleman's Magazine*, XCI, pt.i (Jan.-June 1821), 182–3; *D.N.B.*; Bowden, *Industrial Society in England*, pp. 20–21; Hans, *op. cit.* pp. 146–8.

[5] *Manchester Mercury*, 26 January 1762.

[6] *European Magazine*, XXI, 411. The subjects taught in his school included English, writing, accounting, mathematics, book-keeping, drawing, and geography (*ibid.* 412).

[7] *Manchester Mercury*, 21 January 1766.

John Banks, another Manchester lecturer in natural philosophy, stated in the preface to his *Treatise on Mills* (1795) that this work was based largely on the public lectures he had been delivering for twenty years. The book did not attempt to teach the mechanic how to perform the detailed engineering work, but examined the general principles of mechanics and hydrostatics. In justifying the publication of his book, Banks referred to the condition of mechanical knowledge in the country at that time:

> 'It is true, that we have in the kingdom many intelligent engineers, and excellent mechanics; and there are others who can execute better than they can design, otherwise there would not have been so much money expended in attempting what men of science know to be impossible.'

The *Treatise on Mills*, together with his earlier *Epitome of a course of lectures* (1775) and his book, *On the Power of Machines* (Kendal, 1803), which describes many experiments on steam engines and on the strength of materials, did much to inform those who could 'execute better than they can design' by discussing engineering problems in a realistic manner.

There are several references in the *Manchester Mercury* to Banks's lectures in the last quarter of the eighteenth century, and we know also that he lectured in Birmingham, Doncaster and Kendal. By 1785 his lectures on natural philosophy in Manchester were being given under the auspices of the College of Arts and Sciences, and when he lectured in Doncaster he advertised himself as 'Lecturer in Philosophy to the College of Arts and Science in Manchester'.[8] John Kennedy, the great Manchester cotton spinner, refers to Banks in his 'Early Recollections', where he tells how, at the age of fourteen, he (Kennedy) was apprenticed with Adam Murray to the firm of Cannan and Smith, machine makers, at Chowbent in Lancashire, and was brought down from Scotland by James Smith, one of his masters. On the journey, Smith had some calls to make:

---

[1] *European Magazine, loc. cit.*

[2] *Ibid.* and *Gentleman's Magazine, loc. cit.*

[3] M. Boulton to J. Watt, 26 December 1780, B.R.L.

[4] M. Boulton to J. Watt, 26 May 1777, B.R.L.

[5] Parcel E, Boulton & Watt Collection, B.R.L.

[6] M. Boulton to J. Watt, 28 July 1781, Matthew Boulton Letter Book, 1780–83, A.O.L.B.

[7] *European Magazine, loc. cit.* The second edition of his *Analysis of a course of lectures*, published at the request of his students in Manchester, appeared in 1770. The date of the first edition is not known. Hans, *op. cit.* p. 147.

[8] *Yorkshire Journal and General Weekly Advertiser*, 10 and 24 March 1787. We are grateful to Mr J. A. Harrison for this reference.

> 'amongst others, on Mr. Banks, a lecturer on mechanics and natural philosophy, whom he advised to come to Chowbent, where he would strive .... to get him a sufficient audience to attend his lectures. I remember Adam Murray and I had a ticket between us, each paying half-a-crown, and we attended alternately. This was to us a wonderful insight into the laws of nature'.[1]

The price, five shillings, for the course of lectures was evidently not prohibitive even for two apprentices, so that the lecturers at least to some extent anticipated the work of the Mechanics' Institutes. Leaders of science and industry often recommended lecturers to each other so that an audience was guaranteed at the next port of call.[2]

Banks's *Treatise on Mills* was subscribed to by a most impressive array of scientists, engineers and professional men.[3] Such subscription lists for the works of itinerant lecturers show the wide interest in lectures on mechanics and science. A similar impression is formed from the study of the membership lists of the philosophical societies of the day – from the great societies of Birmingham and Manchester to those in market towns. The subscribers to the books and the members of the philosophical societies were largely the same people. Quite often the lecturers were themselves members of scientific societies.

The itinerant lecturers were varied in their educational backgrounds and social antecedents. Many of them, such as the two Rotherams, Warltire and Moyes, had degrees from Scots universities where scientific research was most alive at this period, and they may also have attended one of the Dissenting academies; others, like Adam Walker and James Ferguson, are said to have been almost entirely self-educated. Nearly all of them had strong practical interests and often had one or two minor inventions to their credit; some had watch-making or mathematical instrument making as their principal occupation. Peter Clare, the Manchester clock-maker, was one of the latter type. He lectured in Manchester from about 1772. In 1778 he proposed to establish 'a Philosophical School in which young Persons will be instructed in the general principles of Mechanics, Hydrostatics, Pneumatics, Electricity, Chemistry, &c ....',[4] but he also continued to give public lectures, especially on electricity. Clare was a very close friend of John Dalton, in fact his closest companion and secretary in later years, and was an executor of Dalton's will.[5] He also became one of the secretaries of the Literary and Philosophical Society.

---

[1] J. Kennedy, *Miscellaneous Papers* (Manchester, 1849), p. 14.

[2] Joseph Priestley (Calne) to Matthew Boulton (Birmingham), 28 September 1776, A.O.L.B., introducing John Warltire; John Roebuck (Bo'ness) to Matthew Boulton (Birmingham), 30 October 1777, Dol., recommending Henry Moyes; and Thomas Walker (Manchester) to James Watt, junior (Birmingham), 8 May 1796, Box 3. W, B.R.L., recommending Dr Garnett.

[3] The list of subscribers shows the wide variety of people who were interested in buying such a book. The names included Richard Bradley, engineer, Manchester; David Broad, architect, Manchester; Peter Clare, watchmaker, schoolmaster and lecturer, Manchester; John Dalton; William Hirst, engineer, Gomersal; William Kirk, watchmaker, Manchester; John Knowles, teacher of mathematics, Liverpool; Robert Owen; Joseph Priestley; John Raistrick, Low-moor furnace, Leeds; John Rennie; Thomas Rider, ironfounder, Salford; John Samuels, engineer, Manchester; Michael Satterthwaite, Ulverston, and Benjamin Satterthwaite, Lancaster; William Sharrett [Sherratt], engineer, Manchester; John Southern, Birmingham; Thomas and Richard Walker, merchants, Manchester; and John Wilkinson.

[4] *Manchester Mercury*, 6 January 1778.

[5] H. McLachlan, 'John Dalton and Manchester', p. 177; R. Angus Smith, 'Memoir of John Dalton', p. 277.

Another Manchester clock- and watch-maker, as well as optician, was John Imison.[1] In 1785 he published *The School of Arts*; *or, An Introduction to Useful Knowledge*,[2] which dealt with such 'Branches of Practical Science' as mechanics, electricity, optics, astronomy, instrument-making, clock- and watch-making, and other crafts. The first section was separately published in 1787, as *A Treatise on the Mechanical Powers*,[3] to which Imison had added items on mill-work, including the 'Construction of Water Mills', which he hoped would prove useful to 'those for whose information they are principally intended, viz. working mechanics'. This revised section on mechanical powers was included in a second edition of *The School of Arts*, published about 1794,[4] which contained additional sections on pneumatics, hydrostatics, and hydraulics, including pumps and steam engines. Imison also published other works, including *Elements of Science and Art*.[5] The instrument-makers and clock-makers like Imison and Clare thus played a very important rôle in diffusing scientific knowledge, by making apparatus for lecturers, sometimes by demonstrating the experiments or lecturing themselves, by running schools, and by publishing books on mechanical and scientific subjects.[6]

The subscription fee for a course of lectures might be anything from a few shillings to a guinea, according to the duration of the course and the popularity of the lecturer. No doubt professional men and some of the more prosperous manufacturers tended to make up the bulk of the audiences, but, as we have seen, craftsmen like John Kennedy and Adam Murray also attended, before they had risen into the manufacturers' ranks. Practical men must have been attracted to the lectures by the continual attempts to adapt them to local needs:

> 'This Course is confessedly more adapted to every Branch of Business than any ever read in this Town ....' [7]
>
> 'If a sufficient Number wish to attend, a Lecture will be delivered on the application of Water to Bucket Wheels, accompanied with many Experiments ....' [8]
>
> '[Chemistry's] Application to the common Purposes of Life, as well as to the useful Arts of Bleaching, Dyeing, Agriculture, &c.' [9]

A good deal of the apparatus used also showed a sense of practicality in the lecturers. A list advertised by Mr Pitt in 1779, for example, included optical instruments, cranes, pile-drivers, sawing engines, pumps, steam engines, and many other items.[10] These machines could be seen by the public, free of charge. Most itinerant lecturers had a similar collection. Adam Walker, for example, had a number of working models of different steam engines, including a model of a Boulton and Watt engine.[11]

---

[1] Hans, *op. cit.* p. 151.

[2] There is a copy in the Manchester Central Ref. Lib. The work had been published in parts at an earlier date, under the title of *An Introduction to Useful Knowledge.* See *Manchester Mercury*, 30 Sept. 1783.

[3] Copy in the British Museum.

[4] Copy in Chetham's Library, Manchester. A second edition of *A Treatise on Mechanical Powers* was also published in 1794 (copy in Manchester Cen. Ref. Lib.).

[5] Revised edition (2 vols. 1803) in the British Museum.

[6] Hans, *op. cit.* pp. 150–2. Clock-making, as we have shown elsewhere, was important in the development of mechanical engineering. See A. E. Musson and E. Robinson, 'The Origins of Engineering in Lancashire', *Journal of Economic History*, June 1960, pp. 209–33.

[7] *Manchester Mercury*, 26 November 1771. Adam Walker's lectures.

[8] *Ibid.* 26 January 1790. John Banks's lectures.

[9] *Ibid.* 26 January 1796. Dr Garnett's lectures.

[10] *Ibid.* 16 March 1779.

[11] Matthew Boulton to James Watt, 30 July 1781, Box 20, B.R.L.

No one has yet studied in detail the wealth of books published in the eighteenth century on science and technology. The *Manchester Mercury*, in the second half of the century, printed many advertisements of such books as Benjamin Martin's *General Magazine of Arts and Sciences*;[1] *The New and Compleat Dictionary of Arts and Sciences*, by a Society of Gentlemen;[2] *The Circle of Sciences*, sold by A. Clark, bookseller, Manchester;[3] Charles Hutton's *Treatise on Mensuration*, 'adapted particularly to the Uses of Schools, Mathematicians and Mechanics';[4] William Nicholson's *Introduction to Natural Philosophy*;[5] B. W. Emerson's *The Principles of Mechanics*, described as being 'extremely useful to all sorts of Artificers, particularly to Architects, Engineers, Shipwrights, Millwrights, Watch-makers, &c or any that Work in a Mechanical Way';[6] A. Fletcher's, *The Universal Measurer and Mechanic*, 'a Work equally useful to the Gentleman, Tradesman and Mechanic';[7] William Casson's proposed book on fire engines which was to cover every side of the mechanical operation of steam engines;[8] John Imison's books which we have mentioned above;[9] Adam Walker's lectures;[10] William Henry's *A General View of the Nature and Objects of Chemistry And of its Application to Arts and Manufactures*,[11] and many others. Some provided elementary mathematical knowledge, such as J. Bonnycastle's *Scholar's Guide to Arithmetic* and his *Introduction to Mensuration and Practical Geometry*, which was adapted 'as much as possible to practical Uses .... Workmen and Artificers of all Denominations will find it a ready Assistant'.[12] To these must be added the many encyclopaedias and dictionaries which discussed machines and mechanical processes, often illustrating them with drawings. Books and dictionaries were sometimes published in parts so that they were within range of the artisan's pocket. Some were printed locally; others were printed in London for well-known publishers of scientific books such as Joseph Johnson, who was the publisher for at least three famous Manchester scientists at this period – Thomas Percival, Thomas Henry and John Dalton. In addition to scientific books, there was a great increase in scientific periodicals from 1780 to 1800.[13]

Those who could not afford to buy these books and periodicals could read many of them in Chetham's Library, Manchester, which had been founded in 1653, the first free public library in the country. John Dalton found this a great asset: 'There is in this town', he wrote in 1794, 'a large library, furnished with the best books in every art, science and language, which is open to all, gratis ....'[14] Examination of the library accessions book and of its first printed catalogues[1] reveals that a considerable number of scientific works, both British and foreign, were acquired in the later eighteenth century. The Literary and Philosophical Society also began to build up its own library, which was particularly strong in works on natural philosophy. In addition, there was a subscription library established in the Exchange in 1757, which acquired many scientific works.[2] Another subscription library was founded in 1792, by the 'Manchester Reading Society', the first name on whose membership list was that of Joseph Priestley junior, who made a presentation of 85 volumes, including some of his father's works, which apparently formed the library's original nucleus.[3]

---

[1] *Manchester Mercury*, 7 January 1755. For Martin, see Hans, *op. cit.* pp. 141, 145, 152, 206. Many of these books were advertised in the printed catalogue of the first large-scale booksellers of cheap books, *A Catalogue of Books, for the year 1804–5; Comprising upwards of 850,000 Volumes, in all Languages and Classes of Learning .... by Lackington, Allen, & Co. Temple of the Muses, Finsbury Square, London.*

[2] *Ibid.* 21 October 1755.

[3] *Ibid.* 30 December 1755.

[4] *Ibid.* 21 May 1771.

[5] *Ibid.* 3 December 1782.

[6] *Ibid.* 7 December 1773.

[7] *Ibid.* 7 December 1773.

[8] *Ibid.* 18 January 1785.

[9] See p. 234.

[10] *Manchester Mercury*, 23 July 1799.

[11] *Ibid.* 10 December 1799

[12] *Ibid.* 29 January 1782.

[13] Douglas McKie, 'The Scientific Periodical from 1665 to 1798', *Philosophical Magazine Commemoration Number*, 1948.

[14] Letter of Dalton dated 20 February 1794, quoted in Nicholson, 'The Literary and Philosophical Society, 1781–1851', p. 114.

When all has been said, however, about philosophical societies, itinerant lecturers, and scientific books and periodicals, the strongest educational influence in the lives of many Manchester men must have been their schooling. There were at this period several schools and academies in and about Manchester which taught the principles of general science and provided a sound basis in mathematics. The most important of all, the Warrington Academy (1757–1786), has been described elsewhere.[4] Joseph Priestley, of course, was the most eminent of the Academy's tutors (1761–7), and though he taught languages and 'belles lettres' there he had an influence on scientific studies. An indication of the content of science teaching at Warrington is given by the *Institutes of Natural Philosophy, Theoretical and Experimental* (1785), by William Enfield, LL.D., tutor there from 1770 to 1786, who wrote this work on account of 'the difficulty which I met with, in providing my Classes with a [suitable] Text-book in Natural Philosophy'. It deals with the properties of matter, mechanics, hydrostatics, pneumatics, optics, astronomy, magnetism, and electricity. It is mathematical in emphasis, requiring 'a previous knowledge of the elements of Geometry, Trigonometry, the Conic Sections, and Algebra', but many parts of it are illustrated with experiments. The Academy's scientific apparatus, which was disposed of to Hackney College on the Academy's demise,[5] had been acquired from John Holt, one-time tutor there in natural philosophy, who had obtained it from Caleb Rotheram, of Kendal Academy, who, in turn, had purchased it from John Horsley (1685–1732), M.A., F.R.S., dissenting minister and lecturer in natural philosophy in Morpeth and Newcastle in the early eighteenth century.[6] Scientific apparatus was commonly handed on in this way. So, too, was scientific knowledge. Thus Enfield states: 'I have made use of the works of NEWTON, *Keil*, *Whiston*, *Gravesande*, *Cotes*, *Smith*, *Helsham*, *Rowning*, and lastly *Rutherforth*'.[7] Undoubtedly the origins of the developments we have been describing go back to the Scientific Revolution of the late seventeenth century, and the dissenting academies played an important rôle in preserving and disseminating scientific knowledge.

---

[1] *Bibliotheca Chethamensis*, I & II (Manchester, 1791) and III (Manchester, 1826). See also Mumford, *op. cit.* pp. 222–3.

[2] J. Aston, *A Picture of Manchester* (1816), p. 175, gives 1757, but the correct date may be 1765. See *A Classed Catalogue of the Manchester Subscription Library, instituted 1765* (Manchester, 1831), and W. E. A. Axon, *Handbook of the Public Libraries of Manchester and Salford* (Manchester, 1877), p. 178.

[3] Axon, *op. cit.* p. 61. *A Catalogue of the Manchester Subscription Library .... instituted Aug. 29th, 1792* (Manchester, 1834).

[4] See H. McLachlan, *Warrington Academy: its History and Influence* (Manchester, 1943); and William Turner, *The Warrington Academy* (reprinted from the *Monthly Repository*, 1813–1815), edited with an introduction by G. Carter (Warrington, 1957). See above pp. 223 *n.* 3 and 226–7 for its influence upon the Manchester Literary and Philosophical Society, the College of Arts and Sciences, and the Manchester Academy.

[5] See above, p. 226.

[6] See *D.N.B.* and McLachlan, *English Education under the Test Acts*, pp. 190, 228.

[7] For the works of these earlier natural philosophers and mathematicians, see *D.N.B.*

Manchester was also fortunate in possessing a Grammar School which preserved in the eighteenth century a strong scientific and mathematical tradition.[1] The High Master from 1764 to 1807 was Charles Lawson, a keen mathematician, who promoted the study of his subject in the school and recruited the services of two former pupils of the school, Henry Clarke and Jeremiah Ainsworth. Several eminent scientists were educated at Manchester Grammar School at this time,[2] and it is also interesting to observe that the largest proportion of pupils came from among the artisans, shopkeepers and minor occupations.[3]

Henry Clarke was an important figure in local scientific education. After leaving Manchester Grammar School in 1756, he taught for some years in Leeds and then travelled on the continent, visiting several important mathematicians, among them Lorgna of Verona, whose works he later translated. He established his 'Commercial and Mathematical School', or 'Salford Academy', in Chapel Street, Salford, as early as 1765. In 1772 he began a night-school in Salford in a variety of subjects, including mathematics and natural philosophy, in which subjects he was appointed to lecture at the College of Arts and Sciences.[4] His school at Salford was still being advertised in December 1789.[5] In 1792 he moved to Liverpool and there established the 'Literary, Commercial and Mathematical School', Mount Pleasant (Martindale Hill).[6] But on 25 March 1794 he removed his school back to Manchester.[7] He particularly stressed in his advertisement that he prepared youths for 'the Scientific Parts of Mechanic Professions in general'. About 1797 he moved to Bristol,[8] and in 1802 he was appointed Professor of History, Geography and Experimental Philosophy at the Royal Military College, Marlow. His publications on mathematics were many and varied, and he was altogether a most distinguished scholar and teacher.

We have already referred to the schools of Peter Clare and Adam Walker.[9] These were not the only schools in Manchester with a mathematical and scientific basis. Jeremiah Ainsworth (1743–84), educated at Manchester Grammar School, ran a Mathematical School in Long Millgate for many years and took some of the grammar school boys for mathematical lessons.[10] Holt and Son's 'Mercantile and Mathematical School', Oldham Street, was described in 1788 as having been going for several years, and catered for both day and evening students.[11] In the same year R. Hartley's 'Commercial and Mathematical School', Princes Street, was advertised.[12] In 1796 John Fern opened a 'Mathematical Academy' at 26 Spring Gardens.[13] We can conclude therefore that there were numerous schools in Manchester directed towards satisfying the demand for scientific, mathematical and commercial studies.

---

[1] A. A. Mumford, *The Manchester Grammar School 1515–1915* (1919), p. 193; Hans, *op. cit.* pp. 39–41.

[2] Hans, *op. cit.* p. 40.

[3] Mumford, *op. cit.* p. 170.

[4] See above p. 225.

[5] *Manchester Mercury*, 29 December 1789.

[6] Hans, *op. cit.* p. 96.

[7] *Manchester Mercury*, 25 February 1794.

[8] Rev. George Heath, *The History, Antiquities, Survey and Description of the City and Suburbs of Bristol* (Bristol, 1797), p. 81.

[9] See above, p. 233 and p. 231.

[10] Mumford, *op. cit.* p. 197; Hans, *op. cit.* p. 111.

[11] *Manchester Mercury*, 1 January 1788.

[12] *Ibid.* 18 March 1788.

[13] *Ibid.* 29 March 1796.

IV

It would appear, from our investigations in Manchester, that there was a closer association between science and industry in the early Industrial Revolution than has hitherto been thought. Further research is needed on other towns, but there seems to be sufficient *prima facie* evidence for asserting that scientific and technical education was fairly widespread in this period. Most of the books and periodicals to which we have referred had a national market. The itinerant lecturers in natural philosophy visited most of the chief towns. Some of them, such as Adam Walker, had schools in London.[1] The metropolis, of course, had its Royal Society, the Society for the Encouragement of Arts, Manufactures and Commerce (founded 1754), and the Royal Institution (founded 1799): it was still the acknowledged centre of scientific thought and education. But some of the larger provincial cities were challenging its predominance. The Manchester Literary and Philosophical Society was paralleled in Birmingham by the famous Lunar Society. In Birmingham there was also, as Professor Ashton has pointed out, 'much coming and going between the laboratory and the workshop, and men like James Watt, Josiah Wedgwood, William Reynolds, and James Keir were at home in the one as in the other.'[2] They doubtless benefited a good deal from their regular intercourse with such scientists as Erasmus Darwin, Richard Lovell Edgeworth, and Joseph Priestley.[3] 'Never before in history was there such an advantageous syncretism of pure science and advancing industry as in the Lunar Society.'[4]

This orientation of science towards industry in the deliberations of the Lunar Society has been examined more closely in recent years,[5] and though it is clear that the industrial emphasis did not debar the 'Lunatics' from engaging in pure research in electricity and the collection and identification of new gases, at a time when their potential applications to industry were not known, yet a good deal of the correspondence between friends in the society has a very practical flavour. Keir, Watt and Black shared an interest in a patent for the manufacture of alkali, and the course of their interests is described very fully in correspondence between Watt and Black;[6] Keir and Boulton wished to exploit commercially an alloy, discovered by Keir, which had almost the same composition as Muntz's metal;[7] Wedgwood supplied chemical utensils for Priestley's experiments, while Priestley analysed minerals of possible utility in pottery;[8] Small, Boulton, Keir and Watt, with the advice of John Whitehurst, F.R.S., the Derby watchmaker, were involved in a plan to mass-produce clocks, while the tools of the clock- and instrument-making trade assisted Boulton and Watt in their development of engineering technique.[1] Even before Watt came to Birmingham, the members of the Lunar Society were interested in the design of steam engines. Boulton had invented a steam-engine of his own which he discussed with Erasmus Darwin and Benjamin Franklin. Boulton's 'toy' business also caused him to be interested in metallurgy. In these pursuits he was aided by William Withering, who translated Bergmann's *Outlines of Mineralogy* (Birmingham, 1783), and by James Keir. Similar examples of collaboration in the industrial applications of science could be multiplied.

---

[1] For other London schools in which science was taught, see Hans, *op. cit. passim.*

[2] Ashton, *op. cit.* p. 16.

[3] *Ibid.* p. 21. See also P. Mantoux, *The Industrial Revolution in the Eighteenth Century* (1928), pp. 387–8. The stimulus and benefits were mutual. See E. Robinson, 'The Lunar Society and the Improvement of Scientific Instruments', *Annals of Science*, XII (1956), 296–304, XIII (1957), 1–8.

[4] A. and N. L. Clow, *The Chemical Revolution* (1952), p. 614.

[5] R. E. Schofield, 'Industrial Orientation of Science in the Lunar Society of Birmingham', *Isis*, 48 (1957), 408–415.

[6] In the Watt papers at Doldowlod.

[7] H. W. Dickinson, *Matthew Boulton* (Cambridge, 1937), pp. 101–3.

[8] E. Robinson, 'The Lunar Society and the Improvement of Scientific Instruments', *Annals of Science*, XIII (1957), 1–2.

Besides those men of industry and science who are known to have been members of the Lunar Society, there were others who long maintained close relationships with members of the Society. Josiah Wedgwood is the first in importance among some very important men. He was a F.R.S. and a member of the Derby Philosophical Society, as well as of numerous other organizations, including Franklin's 'Club of Thirteen'.[2] The interplay between industry and science in Wedgwood's life is best seen in his scheme to combine with other Staffordshire potters to set up a research establishment.[3] He also encouraged scientific interests in his own district, by patronizing the lectures of John Warltire and engaging him to instruct his own children and those of Erasmus Darwin in chemistry.[4] Wedgwood's own laboratory assistant was Alexander Chisholm, a chemist of no mean ability.

Like Wedgwood, John Roebuck and Samuel Garbett cannot be recognized as full members of the Lunar Society, though they were certainly on very close terms with Boulton, Watt and others. The refining laboratory and the vitriol works operated in Birmingham by Garbett and Roebuck are *loci classici* of the union between chemistry and industry in the development of eighteenth century Birmingham. Among the occasional visitors to the Lunar Society were John Smeaton, the engineer, Henry Moyes, the itinerant lecturer, Pieter Camper, the Dutch scientist, and R.E. Raspe, geologist, assayer, and man of science.[5] There must have been many others whose visits cannot be substantiated by written evidence, since the Lunar Society kept no records, but from those who are known to have attended meetings we can compile a most impressive record of the relationships between scientists and industrialists. Indeed many of the industrialists have some claim to scientific prominence in their own right. We should not overlook the fact, moreover, that the 'Lunatics' spread their influence by their membership of other societies. All of them were Fellows of the Royal Society and many were members of the Society for the Encouragement of Arts, Manufactures and Commerce.[6]

In Newcastle-upon-Tyne, in this same period, we come across Henry Moyes, Gustavus Katterfelto, and others lecturing in natural philosophy, and in 1793 the Newcastle Literary and Philosophical Society was founded, following the

---

[1] *Ibid.* XII (1956), 296–304.

[2] E. Robinson, 'R. E. Raspe, Franklin's Club of Thirteen, and the Lunar Society', *Annals of Science*, XI (June 1955).

[3] R. E. Schofield, 'Josiah Wedgwood and a Proposed Eighteenth-century Industrial Research Organization', *Isis*, 47 (March 1956).

[4] D. McKie, 'Mr Warltire, a good chymist', *Endeavour*, X (January 1951).

[5] R. E. Schofield, in his valuable paper, 'Membership of the Lunar Society of Birmingham', *Annals of Science*, XII (June 1956), denies that Raspe and Pieter Camper ever attended any meeting of the Lunar Society, but their visits can be substantiated from James Watt's pocket diaries at Doldowlod (*e.g.* under 13 June 1779: 'Sunday at Soho with the Lunar Society. Mr Raspe was there & Mr Edgeworth'). They were not, however, regular attenders.

[6] R. E. Schofield, 'The Society of Arts and the Lunar Society of Birmingham', *Journal of the Royal Society of Arts*, June and August 1959.

Manchester and Birmingham precedents.[1] Like the Manchester Society, that in Newcastle was broad in its scope, with moral and literary as well as scientific purposes, but from the first it showed a marked interest in the application of natural philosophy to industrial processes, particularly to the local industries of coal, lead, and iron mining, metal, chemical, and glass manufactures.[2] The papers on coal-mining were, as might be expected, most numerous of all. Indeed, the Newcastle Literary and Philosophical Society was the cradle of the North of England Institute of Mining Engineers, eventually established in 1852.

Regular courses of scientific lectures were instituted by the Newcastle Society in 1803, when the Rev. William Turner was appointed to 'a permanent Lectureship in the several branches of Natural and Experimental Philosophy, Chemistry, etc.',[3] a post which he held until 1833. 'Without mechanics and chemistry', it was pointed out, 'how wretched would be our manufactures, and how worthless the amount of our mineral possessions! Exactly in proportion to the state of these sciences is the condition of the one and the value of the other.' Turner was provided with a lecture room and a 'philosophical apparatus' formerly belonging to Dr Thomas Garnett (recently deceased) of the Royal Institution. He greatly stressed in his introductory discourse 'the application of Philosophy to the arts' [manufactures], especially to local industries, and in formulating his courses he was careful 'to apply the [scientific] principles laid down to the explanation of the machines, etc. most useful in this district'.[4]

The Newcastle Literary and Philosophical Society was in touch with the Lunar Society through Richard Chambers's correspondence with Matthew Boulton. The plans for the society were submitted to Boulton in 1793 and he was also asked to honour them with his 'Observations upon any Subject connected with Coal or the Coal Trade – particularly if you could furnish us with an account of the Wedgeburgh mines . . . .' [5] As early as 1784, Chambers had introduced Henry Cort to Boulton. In April 1795 Chambers wrote on behalf of the Literary and Philosophical Society to Boulton requesting him to distribute some enclosed letters about the coal trade 'among the most intelligent Gentlemen concerned in Coal Works in your Neighbourhood'.[6] It is clear that the philosophical societies could be a means of diffusing applied science throughout the country.

Philosophical societies in smaller towns had not such large intellectual and financial resources as those of Manchester, Birmingham, and Newcastle, but were similar in their characteristics. Derby, for example, had a philosophical society begun in 1783, though formally inaugurated in 1784.[7] The moving spirit in it was Erasmus Darwin, who had previously had a hand in founding the Lichfield Philosophical Society and the Lunar Society. One of the first letters relating to the Derby Philosophical Society is an invitation from Darwin to the 'Lunatics' to hold joint meetings.[1] The members of the society were varied. They included local worthies like Richard Leaper, C.S. Hope and John Crompton, all of whom became mayors of Derby; the local aristocracy such as Lord Belper and Sir Brooke Boothby; Josiah Wedgwood and his inventor-cousin, Ralph Wedgwood; a number of local medical men; and last, but not least, local industrialists, such as William Strutt, William Duesbury and Dr Robert Bage of Elford.

---

[1] R. S. Watson, *The History of the Literary and Philosophical Society of Newcastle-upon-Tyne* (1897). The references to Moyes and Katterfelto are on pp. 203–6. A Unitarian minister, the Rev. William Turner, who was educated at Warrington Academy, played a leading rôle, like the Rev. Thomas Barnes in Manchester. See above, p. 236, for John Horsley's lectures in natural philosophy in Morpeth and Newcastle in the early eighteenth century.

[2] See especially Turner's paper on the objects of the proposed society (*ibid.* pp. 35–40) and the brief survey of papers read at the monthly meetings (*ibid.* chap. vii).

[3] *Ibid.* pp. 208–16. Previously, it was pointed out, scientific education could be acquired only 'by expensive residence in a distant capital', or by 'the precarious arrival of occasional lecturers' (*ibid.* p. 217).

[4] *Ibid.* p. 223.

[5] R. Chambers to M. Boulton, 6 March 1793, A.O.L.B.

[6] R. Chambers to M. Boulton, 30 April 1795, A.O.L.B.

[7] E. Robinson, 'The Derby Philosophical Society', *Annals of Science*, IX (1953), 359–67.

William Strutt, son of Jedediah Strutt, was a co-founder with Erasmus Darwin of the Derby Society and on Darwin's death in 1802 succeeded him as President of the Society.[2] Through Darwin, Strutt became a close friend of R. L. Edgworth, another member of the Lunar Society; he also knew Peter Ewart, with whom he discussed his scientific writings, and Ewart's friend, George Lee, while Thomas Hewes built two of the wheels for the Strutts' West Mill.[3] Strutt is typical of the second generation of educated industrialists:

> 'Although it was Strutt's mechanical genius that secured his election as Fellow of the Royal Society in June, 1817, when he was 60, he maintained throughout life an unflagging interest in many branches of pure science. His reading was wide – it included the works of Newton, Euler, Blair, Priestley, Landen and Vince . . . .' [4]

He was no doubt assisted in obtaining this wide range of reading by the fine collection of books bought by the Derby Philosophical Society which the members of the Society were entitled to borrow.

William Duesbury, another of the industrialist members of the Derby Society, was well known as a porcelain manufacturer of the period, and Robert Bage, the paper manufacturer and friend of William Hutton, also belonged to the Society. The Derby Philosophical Society was probably typical of the societies in Northampton, Exeter, Leicester and other middle-sized towns.

The frequency with which itinerant lecturers visited Manchester in the last decades of the eighteenth century might be thought to be exceptional, but a study of local newspapers in other industrial cities shows that they were frequent visitors to all of them. In Bristol, for example, all the well-known lecturers gave courses at one time or another. Advertisements appeared in the Bristol newspapers for courses by James Arden, James Ferguson, John Warltire, Henry Moyes, Adam Walker junior, and Henry Clarke, while a local personality, Benjamin Donne, gave several courses each year from 1765 to 1798. On several occasions during this period there were two lecturers operating simultaneously within the town, while Donne was often holding courses in the same week both at Bristol and Bath. Bristol was fortunate moreover in numbering among its citizens Dr Thomas Beddoes,[5] formerly Reader in Chemistry at Oxford, and founder of the Bristol Pneumatic Institute, where Humphrey Davy began his scientific career. Beddoes was a close friend of James Watt, Erasmus Darwin and other members of the Lunar Society, and he was related by marriage to R. L. Edgeworth. The Wedgwoods knew him and were in the habit of staying in Clifton. He assisted the Oxford engineer and aeronaut, James Sadler, in his experiments upon steam engines in 1792–3.[6] While Warltire was lecturing in Bristol, his host was Joseph Fry, who corresponded with James Watt about Warltire's attempts to obtain a soft metal from manganese.[1]

---

[1] E. Darwin to M. Boulton, 17 January 1784, A.O.L.B.

[2] R. S. Fitton and A. P. Wadsworth, *The Strutts and the Arkwrights, 1758–1830* (Manchester, 1958), p. 175.

[3] *Ibid.* pp. 175–7, 207 *n.*, 215 *n.* For Ewart, Lee, and Hewes, see above, pp. 229–30.

[4] *Ibid.* pp. 170–1.

[5] E. Robinson, 'Thomas Beddoes, M.D., and the Reform of Science Teaching in Oxford', *Annals of Science*, XI (June 1955).

[6] A. Raistrick, *Dynasty of Ironfounders. The Darbys of Coalbrookdale* (1953), pp. 158–9.

The diaries of an eighteenth century Sheffield cutler, Thomas Asline Ward,[2] show how significant a part the itinerant lecturers played in the cultural life of Sheffield industrialists, and Mr J. E. Harrison has collected several references to their activities in Doncaster, which Banks, Warltire, Moyes and others visited.[3] The itinerant lecturers operated with the same frequency in Birmingham, though no thorough survey of their visits there has yet been undertaken. References to them occur quite frequently in Matthew Boulton's correspondence. We have already mentioned Boulton's contacts with Adam Walker; there are also letters from Joseph Priestley to him recommending Warltire [4] and from John Roebuck asking him to collect subscribers for Moyes.[5] In turn, Boulton recommended Warltire to Erasmus Darwin in Derby and Josiah Wedgwood in Etruria. That such lectures were considered to be an essential part of the education of every young businessman can be seen from the concern of John Gilbert, the Duke of Bridgwater's steward, that his son should accompany Boulton to a course of lectures by James Arden in Birmingham, while the young man was Boulton's guest.[6] Boulton himself arranged for his own son, M. R. Boulton, to attend Dr Beddoes's and Dr Hornsby's lectures in Oxford.[7] The taste remained with him in adulthood, since M. R. Boulton's pocket diary refers to his attendance at John Stancliffe's lectures on galvanism.[8] *Aris's Birmingham Gazette* shows that James Ferguson, James Booth, Mr Burton, Mr Long, and many others lectured in Birmingham besides those we have already mentioned. As in Manchester, their advertisements often stress the practical application of the lectures to local industries. Thus John Warltire's lectures on chemistry would give Birmingham manufacturers

> 'an Opportunity of informing themselves of the particular Properties of the various substances imployed in the different Processes they are necessarily conducting every Day; and consequently, a Means of improving them to *their own Advantage*'.[9]

The association between science and industry was particularly strong in Scotland, where there occurred in this period a brilliant flowering of scientific thought and technology.[10] In Edinburgh and Glasgow universities, great scientists such as William Cullen, Joseph Black, James Hutton, and Francis Home made important contributions to industrial technology. Their students included later famous industrialists such as John Roebuck, James Keir, and Charles Macintosh, and they were in close contact with scientists and manufacturers in Birmingham, Manchester, and other English industrial centres. The association between Black, Roebuck, and Watt in the development of the steam engine is famous, but there was important scientific-industrial collaboration in other fields, such as bleaching and the production of synthetic soda. Edinburgh and Glasgow also had philosophical and chemical societies and academies in which science was taught outside the universities. There was, for example, the Andersonian Institution (established by Dr John Anderson, professor of natural philosophy in Glasgow University), forerunner of the Royal Technical College in Glasgow. Dr Thomas Garnett, who lectured there on chemistry and physics, we have already mentioned in our list of itinerant lecturers in natural philosophy; he eventually moved to the Royal Institution in London. George Birkbeck also came from the Andersonian Institution to London, where he took the lead in establishing Mechanics' Institutes and was associated with the founding of University College.[1]

---

[1] Joseph Fry to James Watt, 1st Month 16, 1783, Dol.

[2] *Peeps into the Past: Extracts from the Diaries of Thomas Asline Ward* (ed. A. B. Bell, Sheffield, 1909).

[3] J. A. Harrison, 'Blind Henry Moyes, "An Excellent Lecturer in Philosophy",' *Annals of Science*, XIII (June 1957).

[4] Joseph Priestley to Matthew Boulton, 28 September 1776, A.O.L.B.

[5] John Roebuck to Matthew Boulton, 3 October 1777, Dol.

[6] He thought it 'of the Greatest Consequence' that his son should attend these lectures. J. Gilbert (Worsley) to M. Boulton (Birmingham), 7 Sept. 1765, A.O.L.B. *Aris's Birmingham Gazette*, 2 and 9 September 1765, contains advertisements of Arden's lectures.

[7] A. Noble Brown (Balliol College, Oxford) to M. Boulton (Soho), 25 February 1791, A.O.L.B.

[8] M. R. Boulton's Pocket Diary, 4 and 5 March, 5 April, 1801.

[9] John Warltire's advertisement in *Aris's Birmingham Gazette*, 11 October 1779.

[10] See A. & N. L. Clow, *op. cit.* especially chap. XXV, for a detailed account.

Ireland also participated in these developments. A Dublin Philosophical Society had been founded as early as 1683 and the (Royal) Dublin Society had existed continuously since 1731. A Medico-Philosophical Society was formed in 1756 and the Irish Academy in 1783 (chartered 1786), the first volume of its *Transactions* appearing in 1787. Towards the end of the eighteenth century the Dublin Society felt 'that the time had come when the formation of schools of science, in which qualified professors might lecture .... in accordance with the example and precedent set in such matters in England and Scotland, more likely to further the purposes for which the Society had originally been founded'.[2] Hence William Higgins (1763–1825) was appointed professor of chemistry and mineralogy to the Society in 1795,[3] equipped with a laboratory, and instructed 'to make such experiments on dyeing materials and other articles, wherein chymistry may assist the arts'.[4] That practical chemical instruction was given in his laboratory is evident from advertisements in *Saunders' News Letter* and the *Hibernian Journal* of 1797 and later years. Systematic courses of lectures in chemistry and natural philosophy were instituted in 1800 [5] and soon became an important feature of the Society's work in Dublin and also in the provinces, to which they were ultimately extended. In 1795 Dr Walter Wade was appointed professor and lecturer in botany, and in 1800 James Lynch, optician, of Capel St., Dublin, was appointed to a similar post in hydraulics, mechanics, experimental philosophy, etc.[6] The most eminent scientist in the Society, however, was Dr Richard Kirwan, F.R.S., president of the Royal Irish Academy, 1799–1812, one of the most notable chemists in Europe at this time.[7] Many of the books and papers published by Kirwan and Higgins were of considerable importance to industrial chemistry, especially to the Irish linen industry.

Thus it appears that there was a widespread interest in applied science in the late eighteenth century. Many scientists or 'natural philosophers' had industrial interests, and many industrialists were interested in science. It may be objected, however, that these interests were too empirical and too fragmentary to be called 'scientific'.[1] This criticism can be met by considering what science was at this period. It is true that many of the scientific theories of the day – the whole complex of phlogiston theory, the theories of chemical combinations, of dyeing, bleaching, etc. – were later to be proved erroneous, but they were useful concepts at the time: modern science has evolved through a series of discarded hypotheses. The scientific theories of the late eighteenth century ought to be criticized only in the light of the knowledge then available. At that time, as a contemporary, William Nicholson, pointed out, scientists were 'not sufficiently advanced in any part of the knowledge of nature, to reason with safety, without constant recurrence to the test of experiment'.[2] This widespread adoption of what has been called 'the scientific method' – the numerous attempts 'to improve natural knowledge by experiment', the original aim of the Royal Society – was of considerable importance to industry, for much of the experimenting was of a practical, even utilitarian, kind, in which scientists and industrialists had mutual interests.

---

[1] T. Kelly, *George Birkbeck* (Liverpool, 1957).

[2] H. F. Berry, *A History of the Royal Society of Dublin* (1915), p. 159. That some of the itinerant natural philosophers visited Ireland is shown by the example of Adam Walker. See above, pp. 231–2.

[3] He was also chemist to the Irish Linen Board. See *D.N.B.*; T. S. Wheeler, *Endeavour*, XI (1952), 47–52; J. R. Partington, *A Short History of Chemistry* (1951), pp. 272–6. He was the nephew of another well-known Irish scientist, Bryan Higgins (*c.* 1737–1818), M.D. of Leyden University, who in 1774 opened a school of practical chemistry in Greek Street, Soho, London, and who was one of the first to take out a patent for the manufacture of synthetic soda. See Sullivan, *op. cit.* 483–7; Partington, *op. cit.* pp. 269–72; Clow, *op. cit.* pp. 97–9; *D.N.B.*

[4] Berry, *op. cit.* p. 355.

[5] See W. Higgins, *A Syllabus of a Course of Chemistry for the year 1802* (Dublin, 1801).

[6] Berry, *op. cit.* pp. 159–60.

[7] See D.N.B.

A modern chemist may easily take an unhistorical view of the primitive attempts made by such men as Watt, Keir, and Henry to analyse chemical processes too complex for the chemical knowledge of the period. But their efforts were undoubtedly scientific in the sense of being based on rationally ordered experiments. Watt and Keir, for example, certainly thought in terms of controlled experiments in a laboratory when they were considering the manufacture of alkali or the chlorine process of bleaching. Similarly Thomas Cooper asked James Watt to send him a digester so that he could carry out his experiments in laboratory conditions, and Thomas Henry also experimented very thoroughly on dyeing and bleaching.

No doubt the mass of manufacturers in the late eighteenth century had little scientific knowledge, but a substantial minority, including some of the most significant figures, were passionately interested in it, for utilitarian as well as intellectual reasons, and there seems little doubt that such knowledge contributed to the industrial changes of that period. We do not wish to push this thesis too far – to underestimate the contributions of unscientific though intelligent practical craftsmen – but the evidence appears to necessitate some modification of the traditional view of the Industrial Revolution.

University of Manchester
City of Coventry Training College

---

[1] Such a criticism was made at the Economic History Conference by Dr D. W. F. Hardie.

[2] W. Nicholson, *The First Principles of Chemistry* (1790), pp. 413–4.

THE ORGANIZATION OF THE ENGLISH LEATHER INDUSTRY IN THE LATE SIXTEENTH AND SEVENTEENTH CENTURIES

by L. A. CLARKSON

I

THE leather industry is one of the forgotten occupations in English industrial history. Modern authors, like Professor A. P. Usher, are not alone in believing that the leather industry was more important than the metal crafts in England, France, and even Germany, before the eighteenth century.[1] Writing at the turn of the eighteenth and nineteenth centuries, Macpherson in his *Annals of Commerce* estimated that the value of leather produced in England in the late eighteenth century was second only to the value of woollen cloth;[2] while in 1657 Henry Belasyse had listed leather among the 'cheife richyes' of England.[3]

Leather had many important uses. Apart from footwear, it was also used for clothing – sometimes in the place of woollen cloth – 'for thrift and saving in apparell'.[4] The farmer made heavy demands on leather, '. . . . what for boots and shoes for himselfe and children, and leather for saddles, cart saddles, horse collars and other accommodations about husbandry . . . .'.[5] Leather was also employed in industry for such purposes as belts, buckets, and bellows used for providing the blast in iron furnaces.[6]

The industry provided employment for large numbers of people. In some places the leather crafts formed the most important single group of occupations. In Leicester 19 per cent of those newly admitted to the freedom of the city during the sixteenth century were leather workers.[7] The industry was based upon local supplies of hides, and enclosure for cattle pasture probably contributed to its importance. In South Yorkshire and the West Midlands – and also to some extent in the Weald and the Forest of Dean – the leather crafts existed side by side with the iron industry and the metal crafts.[8] Tanners formed one of the most important groups of industrial workers in Birmingham in the sixteenth century before the metal crafts became predominant,[9] and in Sheffield at the end of the seventeenth century leather workers were only less numerous than metal, cloth and agricultural workers.[10] But the most important centre of the leather industry was London, where it was based upon abundant supplies of hides which were a by-product of the city's meat consumption. In the early seventeenth century there were thought to be nearly three thousand shoemakers around the city and about the same number of light leather workers.[1] At the end of the century there were about eighty tanneries in Bermondsey and Southwark where the industry was concentrated.[2] These examples could be multiplied considerably but enough has been said to show the importance of the leather crafts in the economy in the late sixteenth and seventeenth centuries.

---

[1] A. P. Usher, *Introduction to the Industrial History of England* (1921), p. 254.

[2] D. Macpherson, *Annals of Commerce*, IV (1805), 15.

[3] H. B(elasyse), *An English Traveller's First Curiosity* (1657) in *Hist. Mss. Com.* Various Collections, II, 200.

[4] B.M. Lans. MS. 67, fo. 206. This statement was made in 1591. According to Beveridge's price indices the price of leather did not rise appreciably during the last quarter of the sixteenth century, but the price of cloth rose considerably (W. Beveridge, *Prices and Wages in England*, I (1939), 667–8, 705, 712, 737–9). This may have led to a substitution of leather for cloth.

[5] B.M. Thomason Tracts, E. 168(4), p. 3 (about 1641).

[6] See H. R. Schubert, *History of British Iron and Steel Industry* (London, 1957), pp. 409–412.

[7] W. G. Hoskins, 'Provincial Towns in the Sixteenth Century', *Trans. Royal Hist. Soc.* 5th series, VI (1956), 13.

[8] Oak bark for tanning was freely available in these districts.

[9] W. H. B. Court, *The Rise of the Midland Industries* (1938), pp. 34–5.

[10] E. J. Buckatzsch, 'Occupations in the Parish Registers of Sheffield, 1655–1719', *Econ. Hist. Rev.* 2nd ser. I (1949), 145.

II

Before the nineteenth century there were two important ways of making leather. Heavy cattle hides, and sometimes calfskins, were treated with a vegetable tanning agent, which in England was almost invariably oak bark. Light skins of sheep, goats, calves – in fact almost any kind of animal – were generally 'dressed' with train oil or alum. Tanning consisted of two stages. The first was the preparation of the raw hides by removing the hair and the fatty layer adhering to the inside. This was done by soaking them in a lime solution which loosened the hair, and then by scraping both sides of the hides with a knife. The lime also separated the fibres of the hides which enabled the tanning solutions to penetrate throughout their thickness; but if they remained too long in the lime solution the hides were damaged, and it was 'one of the best poyntes of workmanship' to decide the right time to end this operation.[3] The hides were then 'bated' by soaking them in an infusion of dog or bird droppings which softened them and further prepared them for tanning, but, like liming, bating could easily damage the hides unless carefully controlled.

The second stage involved soaking the prepared hides in solutions of oak bark and water for any length of time varying from about six months to two years. The leather acts of 1563 and 1604 [4] stipulated that leather intended for the outer soles of shoes should be tanned for at least a year and other shoe leather for at least nine months, but the time necessary depended on the quality of the hides, the strength of the tanning solutions, and upon local practice. The tanning solutions were contained in pits or vats located near a stream and the hides were immersed in a series of solutions of increasing strength. At certain times during tanning the hides were moved from one solution to another and were sometimes left exposed to the air for a few hours. Tanning required great skill, and particular care had to be taken in judging when the hides should be moved from one solution to another. 'The time of the changing of the leather from one owes to another must be timed at proscribed howres or els the lether wilbe vtterlie spoilt', wrote a correspondent, who had some experience of tanning, to Lord Burghley in 1576. He continued, 'there be an infinite nomber of rules to be observed in Tannyng the wch few tanners did ever conceyve much less the parliament'.[5]

---

[1] P.R.O. S.P. 14/4, no. 88; B.M. Add. MS. 12504, fo. 112.

[2] *Commons' Journals*, XII, 18.

[3] B. M. Lans. MS. 5, no. 58.

[4] 5 Eliz. cap. 8; 1 Jac. 1, cap. 22.

[5] B. M. Lans. Ms. 20, fo. 10. This account of tanning has been constructed from a number of sources including papers among the manuscripts of Lord Burghley relating to the leather act of 1563 (B. M. Lans. MSS. 5, no. 58; 20, fos. 10, 14, 15–18). The act of 1563 also contains useful information. There are several works on tanning dating from the late seventeenth and eighteenth centuries including J. Houghton, *A Collection for the Improvement of Husbandry and Trade*, ed. R.

Tanning removed the natural oil from hides which needed replacing to make the leather supple and waterproof. This was the task of the currier who impregnated the 'crust' leather with train oil and tallow. The currier also shaved the leather to the thickness required by shoemakers and other leather users, and performed additional finishing operations such as staining the leather and 'graining' the surface with a ribbed board to give it a more attractive appearance. Like tanning, currying was a skilled occupation, for the basic processes required modification to meet the needs of individual customers, and leather could easily be damaged by careless workmanship.[1]

By contrast with tanning, the manufacture of leather with oil or alum was a much simpler process. First the skins were prepared, usually by hanging them in wood smoke which loosened the hair or wool without damaging it. Oil dressing was done by placing the skins in troughs and soaking them with train oil. They were then beaten and soaked again, the operation being repeated several times. Finally the skins were piled up and left in the open air for several days. Alum – dressed – or tawed – leather was made by preparing a paste of alum, salt, flour, and egg yolks with water and applying it to the skins. When it dried a fresh application was made. This was repeated several times until the skins had been converted into leather.[2] Both oil dressing and tawing were very much quicker than tanning, taking no longer than a few weeks.

Tanned and dressed leather were normally used for different purposes. For boots and shoes and heavy work generally, tanned leather was more suitable, although dressed leather was being used more and more for footwear in the later seventeenth century.[3] Dressed leather was more suitable for gloves and other leather garments, and the many types and qualities of dressed leather [4] meant that it could be used for a wide range of clothing.

III

The two quite different methods of making leather split the industry into two separate branches which were rarely – if ever – combined: the heavy and light leather crafts. The heavy leather crafts were tanning, currying, and the occupations using tanned leather, shoemaking being the most important. The light leather crafts were leather dressing and glovemaking – an occupation which embraced the manufacture of all kinds of light leather goods. The division of the industry was recognized by observers in the late sixteenth century [5] and was implicit in the leather act of 1563 which controlled the manufacture of tanned leather and footwear only.[6] The heavy and light leather crafts were organized in different ways; and in both cases an examination of probate inventories of leather craftsmen throws light upon the features of organization.

Bradley (1727), I, 319–21; W. Maple, *A Compleat & Effectual Method of Tanning without Bark* (London, 1739); Dublin Society, *The Art of Tanning and Currying Leather* (London, 1774); M. Postlethwait, *Universal Dictionary of Trade and Commerce* (4th ed. 1774), II, article under 'Leather'.

[1] Postlethwait, *op. cit.*; J. W. Waterer, *Leather in Life, Art, and Industry* (London, 1944), p. 148; 5 Eliz. cap. 8.

[2] Houghton, *op. cit.* 319; Postlethwait, *op. cit.* Waterer, *op. cit.* p. 144; J. A. Wilson, *Modern Practice in Leather Manufacture* (New York, 1941), p. 418; B.M. Lans. MS. 74, fos. 116–7.

[3] *Cal. S.P.D.* 1675, pp. 369–70.

[4] A document dated July 1593 listed nine kinds of alum-tawed leather and ten kinds of oil-dressed leather. There were two or three qualities of each kind (B.M. Lans. MS. 74, fos. 116–7).

[5] See for example, B.M. Lans. MS. 74, fo. 140.

[6] Despite an ambiguous clause defining leather the act was never intended to control the manufacture of light leather. The light leather crafts were later regulated under a licence granted to Edward Darcy in 1592 (P.R.O. Patent Rolls, C66/1384; B.M. Lans. MS. 74, fos. 167–9).

A number of inventories of leather craftsmen is listed in the appendix.[1] They provide the material for a sketch rather than a detailed picture of the organization of the industry, but, supplemented by some other information, it is likely to be reasonably accurate. In the case of tanners any inventories in which the value of the craft goods was less than half the total value of the estate have been omitted in order to exclude the farm worker who occasionally did a little part-time tanning,[2] but who otherwise had no claim to be described as a tanner. This has not been done in the case of other leather workers for most of them had only a small proportion of their wealth bound up in their crafts. The total values of the estates have been given as well as the values of the stock-in-trade in order to give some idea of the living that could be made by leather craftsmen.

One feature that emerges clearly from a study of the inventories is that the leather crafts could be conducted with very small amounts of capital although fairly large investments were sometimes present in tanning. In this occupation there was a wide variation in the amount of capital employed. At one end of the scale were tanners like Edward Blake and John Chucking who worked with very little capital and who obviously maintained a very poor standard of living. At the other extreme was John Neall of Horncastle in Lincolnshire who left property worth more than £1,300 in 1567, and who had approaching £800 invested in his business. Neall was not unique but there were not many like him. He was probably matched in the scale of his operations by a Leicester tanner, John Tatam, three times mayor of his city at the end of the sixteenth century;[3] and by William House of Buckinghamshire described in 1575 as a 'man both of great wealthe verie wise and most skillfull in his arte, and such a one as made the beste lether in the lande'.[4] In shoemaking the range of capital employed was much narrower and generally less capital was needed than in tanning. It is not possible to be definite about the capital needs of the curriers, but probably they approximated to the shoemakers rather than the tanners.[5] The light leather craftsmen, too, seem to have worked with very modest amounts of capital.

From a closer study of the inventories a rough idea of the cost structure of the leather crafts can be obtained. Fixed costs were low in relation to total costs although perhaps higher in tanning than the other occupations. The equipment of tanners comprised pits and vats, knives, poles, and other tools, and perhaps some device for grinding oak bark.[6] These were not expensive. Thomas Clerke, a tanner of Huntingtonshire, for example, tanned £125 worth of leather in pits and vats valued at 18 shillings; while 'all the vessells belonging to the (tan) yard' of John Neall, who tanned well over £700 worth of leather, were worth £13 13s. 4d. The tools of shoemakers – hammers, knives, cutting boards, lasts – cost very little. In 1636 the equipment of a Boston shoemaker was valued at ten shillings while his stock of leather and footwear was worth over £8. To the cost of equipment must be added something for rent. In the late sixteenth century a tannery, complete with pits, vats, outbuildings, and a dwelling house, could be rented for about £6 a year or less.[1] Shoemakers, curriers, and possibly leatherdressers, needed less space than tanners and probably their rents were lower.

---

[1] A large proportion of the inventories in the appendix comes from Lincolnshire (designated L.A.O.). Other local archives where probate inventories are reasonably easily accessible include Leicestershire, Kent and Middlesex. At the Corporation of London Records Office the 'Orphans' Inventories' are a valuable and well-indexed collection. Among published material, Dr E. W. J. Kerridge has compiled a valuable collection of inventories of Leicester leather craftsmen in *Victoria County History, Leicester*, IV (1958), 83–6. Other printed sources include F. W. Steer, *Farm and Cottage Inventories of Mid-Essex, 1635–1749* (Essex Record Office, 1950); 'Wills & Inventories', I, II, III, *Surtees Society*, II (1835), XXXVIII (1860), CXII (1906).

[2] Like the farm labourers who tanned the hides of horses when they were 'killed by mischaunce or otherwyse' (B.M. Lans. MS. 5, no. 58). One such 'tanner' was Richard Newnam of Kent who died in 1614 leaving a horse hide and a few oddments of leather worth £1. His farm goods were valued at £9 (Kent A.O. P.R.C. 10/48, no. 234).

[3] No inventory has been found, but Tatam's will made in 1594 gives a rough indication of his wealth (Leicester R.O. Wills, 1594, no. 45). This John Tatam should not be confused with another member of the family, also John, who died in 1588 leaving a modest £13 10s. (Kerridge, *loc. cit.* 85, Table VI).

[4] B.M. Lans. MS. 20, fo. 10.

[5] See Kerridge, *loc. cit.* 85.

[6] According to Dr Kerridge (*ibid.*) and also Professor J. U. Nef, in 'Industrial Europe at the time of the Reformation', *Journal of Political Economy*, XLIX (1941), 30, bark mills were

In tanning a large proportion of the capital required was bound up in stocks of raw hides and partly tanned leather. This was because of the slow nature of tanning. In order to secure regular incomes, tanners needed to have a large number of hides evenly spaced throughout the manufacturing processes so that there was a steady supply of leather ready for the market. It was possible to reduce the amount of capital tied up in stocks by shortening the manufacturing process and by using cheap, inferior hides[2] but both devices produced poor quality leather. This explains the wide variation in the amount of capital employed in tanning. In the other leather crafts there was less need to hold large stocks. Leatherdressing was a quicker operation than tanning, and currying could be done in five or ten days.[3] In the leather-using crafts the speed of the manufacturing processes depended on the dexterity of the workmen and the number of craftsmen employed.[4]

Labour costs were proportionately lower in tanning than in the other crafts included in the leather industry. Tanning was an occupation in which there were economies of scale. For much of the time during tanning hides lay in the pits unattended. Therefore to make the most efficient use of the labour employed it was necessary to tan a fairly large number of hides; by doing so average labour costs were reduced. Labour costs were more important in the other leather crafts where output depended mainly on the number of hands at work. Average costs probably rose more quickly in these occupations than in tanning and made large-scale manufacturing units generally impracticable.

Other charges to be met by leather craftsmen included the cost of tanning and leatherdressing materials such as oak bark and lime. These items appear on the inventories but they were usually worth very little. Some tanners, however, held quite large stocks of bark; a Gateshead tanner, for example, possessed

---

expensive pieces of equipment, although neither writer cites evidence. I have found two references to bark mills in tanners' inventories. One was owned by Richard Newnam of Staplehurst, Kent (*supra*, p. 248 note 2) and was valued at 3s. 4d. in 1614; the other was the property of Samuel Lucas of Eleham in Kent, and was worth 18s. together with a sieve in 1630 (Kent A.O. P.R.C. 10/47, no. 42). Even allowing for depreciation, it is difficult to believe that these were ever very valuable pieces of equipment. It may well be that a bark mill was a fairly small, cheap, item worked by hand.

[1] In 1587 a Suffolk tanner rented a tan yard and premises for twelve years at £6 a year (P.R.O. Court of Requests, Proceedings, Req. 2/20/30). A year later an Essex tanner rented a tannery for £3; in this case the landlord also contributed to the cost of the raw hides (Req. 2/66/44).

[2] There was a class of tanner who worked with inferior horse, bull, and decaying hides 'the bigger worke beinge too chargeable for them to deal withall' (B.M. Lans. MS. 5, no. 58).

[3] See 5 Eliz. cap. 8, sect. 13.

[4] When several workmen were employed a simple division of labour could be developed and production speeded up. Simon Eyre, hero of Thomas Dekker's *Shoemaker's Holiday* employed three journeymen. One of them, Ralph, presented his wife with a pair of shoes 'cut out by Hodge, stitched by my fellow Firk, and seamed by myself . . . .' (Act 1, scene 1).

stocks of bark in 1569 worth £20.[1] He probably supplied other tanners with the bark they needed, a fairly common practice in the sixteenth and seventeenth centuries.[2]

Thus the various leather crafts could be conducted with small amounts of capital although technical factors encouraged the development of fairly large units of production in tanning. The inventories of the leather craftsmen also suggest another feature of the organization of the industry. It appears that the heavy leather crafts were usually independent occupations, whereas the various light leather crafts were often combined in one man.

None of the inventories of leather craftsmen indicates that persons described as tanners, curriers, or shoemakers followed any other occupation connected with the leather industry. No tanner has been found owning currying or shoemaking equipment, no currier possessing stocks of manufactured shoes, no currier or shoemaker owning raw hides. It would be rash to generalize on the basis of this rather slender negative evidence but it should be noticed that the inventories of light leather craftsmen indicate that those occupations were combined.[3] This does not mean that the heavy leather crafts were never combined in one man – but separation appears to have been more usual.[4]

The organization of gilds of heavy leather workers also suggests that these crafts were separate occupations. In London there were four separate companies of craftsmen working with heavy leather in the late sixteenth and seventeenth centuries – the cordwainers, the curriers, the saddlers, and the girdlers.[5] The tanners – who were located outside the City – had no gild organization until the Bermondsey tanners were incorporated in 1703.[6] Many provincial centres also supported separate gilds of heavy leather workers, usually tanners, curriers, shoemakers, and sometimes saddlers.[7] In the smaller towns these craftsmen were sometimes amalgamated into a single gild, but amalgamation is not evidence of economic integration.[8] More often it was a matter of convenience in places where there were insufficient leather workers to support a number of gilds representing the various occupations.[1]

---

[1] 'Wills and Inventories' 1, *Surtees Society*, II (1835), 307. This inventory is not complete and it has not been included in the appendix.

[2] See Kerridge, *loc. cit.* 84–5. At the end of the seventeenth century Luke Jones, a Bermondsey tanner, conducted a large trade in buying and selling oak bark (P.R.O. Chancery Masters' Exhibits, C 107/160). The reason offered by Dr Kerridge for this trade – the high cost of bark mills (*supra*, p. 248, note 6) – cannot be accepted. An alternative explanation is the cost and trouble of collecting bark. Oak bark was collected in the spring and could be obtained only when trees were felled – for iron works, for example. This involved a good deal of travelling, carting, etc., and it is not surprising that many tanners left the task of collecting bark to more energetic persons. In the Durham area bark was scarce in the early seventeenth century and the Company of Tanners attempted to ration supplies, but this did not stop a number of individuals from cornering supplies. See *Book of the Tanners' Company, Durham, 1612–55* (Surtees Soc. 1945), *passim.*

[3] *Infra*, p. 251.

[4] The separation of tanning, currying, and shoemaking has remained a feature of the organization of the leather industry until the present century.

[5] These were the four leather gilds appointed to administer the leather act of 1563 in London. The girdlers, however, were not an important group by that time.

[6] *Cal. S.P.D. 1702–3*, pp. 326–31.

[7] e.g. Norwich (F. Blomefield, *History of Norfolk*, III [1806], 206); Chester (*Hist. Mss. Comm.* 8th. report, part 1, pp. 402–3); Carlisle ('Municipal Records of the City of Carlisle', *Cumb. & Westmorland Antiq. & Arch. Soc.* IV, 85); Gloucester (E. Bazeley, 'The Guilds of Gloucester', *Trans. Bristol & Glouc. Arch. Soc.*, XIII, 264); Beverley (*Hist. Mss. Comm.* 'Beverley' [1900], pp. 100, 106); Durham, *Durham Civic Memorials*, ed. C. E. Whiting [Surtees Society, 1945], p. xv).

[8] See S. Kramer, *English Craft Gilds* (New York, 1927), p. 8. 'Amalgamation' is used here to describe the combination of crafts in one gild; 'integration' to mean the combination of crafts in one man.

The heavy branch of the leather industry therefore consisted of a number of independent occupations which were linked by the market. Shoemakers normally bought crust leather directly from the tanners or from middlemen and took it to the curriers who prepared it for them. The reason for this round-about procedure was that currying obscured defects in leather and shoemakers therefore preferred to buy it uncurried. By the act of 1563 curriers were forbidden to buy leather.[2] In fact curriers did buy and sell tanned leather, for by virtue of their position in the manufacturing processes between the tanners and the shoemakers, they were well placed to act as middlemen. At the end of the sixteenth century the London shoemakers complained that there were 124 curriers in the city, including journeymen and apprentices, of whom 21 'doo vse to buy and sell tanned leather'.[3] Some shoemakers, too, became middlemen supplying poorer shoemakers with small quantities of tanned leather;[4] and for much of the late sixteenth and early seventeenth centuries the London shoemakers and curriers engaged in a vigorous rivalry over the trade in tanned leather.[5]

In contrast to tanning, currying, and shoemaking, the light leather crafts were often integrated. The inventories of these craftsmen show that glovers and leatherdressers possessed stocks of skins, dressed leather, and leather goods. For example Robert Burton, described on his inventory as a glover, had a stock-in-trade worth nearly £36 in 1616 which consisted of a stock of raw skins, dressed leather, gloves, bags and purses, and also a stock of wool. From an account of the organization of the light leather crafts written in 1593 it is clear that craftsmen like Burton were common:

> The worker or dresser of leather is set on work by the Country Glover who for the most part doth employ his own prentices, or such journeymen as having served in that trade are not hable to occupie any stock of their own . . . . [6]

As well as the working master – or 'country glover' – the merchant employer had also emerged in the light leather crafts whose function was to supply working artisans with raw skins and leather.[7] Production was organized on a putting-out basis. 'The Glouers and Leatherdressers doo first by up raw hides and skins . . . .' which were dressed either by their journeymen or by outworkers, 'others then their own servants and apprentizes.' Some of the leather manufactured was sold to 'artificers, labourers and husbandry servantes', some to the London leathersellers, and the rest was 'converted into wares by the glover who in the countrie is commonly the worker of all lether yt is whyte tawed or wrought with oker (sic, oil?) . . . .'.[1] In the London region the leatherseller was an important figure controlling most of the supplies of raw skins and also supplying working glovers with leather. At one time the leathersellers had been working craftsmen themselves, 'Michanicks Glouers, Pursers, and Longcutters . . . . And for unityes sake called Leather Sellers', but by the late sixteenth century they had become traders, 'buyers time out of the memory of men'.[2]

---

[1] Kramer, *op. cit.* pp. 98–9.

[2] This prohibition was reinforced in London by an agreement made in 1590 between the curriers and shoemakers, whereby the latter guaranteed the former all the currying work in London providing the curriers did not try to buy tanned leather (B.M. Lans. MS. 63, fo. 18).

[3] P.R.O. S.P. 14/7, no. 88.

[4] See for example London Records Office, *Repertories* 36, fos. 5-6 (1621).

[5] Both the Company of Cordwainers and the Company of Curriers tried to influence government policy in their own interests. In 1548 the shoemakers obtained legislation prohibiting the curriers from buying leather. Then followed five acts in ten years alternatively allowing and prohibiting curriers from dealing in leather. The shoemakers had the upper hand in 1563 and the curriers were not successful in getting a further change in the act, although a number of them did obtain a licence in 1567 allowing them to buy leather, Gildhall MS. 6195; see also G. Unwin, *The Gilds and Companies of London* (1908), p. 252; J. E. Neale, *The Elizabethan House of Commons* (1949), p. 384; *Acts of the Privy Council, 1585*, pp. 200, 265; *ibid, 1590*, p. 282; *Repertories* 19, fo. 35; *Commons' Journals*, I, pp. 240, 352, 365, 389–90; P.R.O. S.P. 12/177, no. 16.

[6] B.M. Lans. MS. 74, fo. 162.

[7] *Ibid.*

How are these differences in organization between the two branches of the leather industry to be explained? There seem to be two major reasons: the first is technical. The heavy leather crafts were occupations requiring different skills which were not easily combined. As we have seen tanning and currying were highly skilled crafts while shoemakers also required considerable skill in cutting, shaping, and stitching footwear. Neither were tanning and currying technically suited to a putting-out system of production – although it was technically possible in shoemaking. Leatherdressing and glovemaking, on the other hand, were fairly simple operations and there were no great technical barriers to integration. The light leather crafts were well suited to a putting-out system: equipment was inexpensive, cheap unskilled labour could be employed,[3] and the raw materials could be conveniently transported. These features were also found in other occupations conducted on a putting-out basis, such as the manufacture of cloth and small metal goods.[4]

Secondly market conditions affected the organization of the leather industry. Tanners and shoemakers tended to produce for different kinds of markets. Shoemakers seem to have done a good deal of bespoke work; they produced for a 'personal' market and lived in close proximity with their customers.[5] Tanners on the other hand produced a more or less standardized product; personal contact was less important and the craft was located in places where conditions were most suitable for tanning.[6] Thus there was a geographical separation of tanning and shoemaking arising from the different kinds of markets facing these producers.[7] Curriers were located near shoemakers rather than the tanners because currying added to the weight of leather and it was cheaper to transport it uncurried. In the case of the light leather crafts, leatherdressing – like tanning – was located where conditions were most favourable; but since light leather goods such as belts, purses, bags, or gloves were not 'personal' products like shoes, they were not made to order [1] and there was no need for their manufacture to develop away from the leatherdressing centres.

---

[1] B.M. Lans. MS. 74, fo. 138; Add. MS. 38170; fos. 87 (b)–88; W. Notestein, F. Relph, H. Simpson, *Commons' Debates, 1621* (1935), vol. 7, 146.

[2] P.R.O. S.P. 16/377, no. 48; S.P. 16/386, no. 90; B.M. Add. MS. 12504, fos. 107–9, 112. See also G. Unwin, *Industrial Organization in the Sixteenth and Seventeenth Centuries* (Oxford, 1904), pp. 127–30.

[3] In 1638 it was claimed that women and boys were being employed by glovers in the London area (P.R.O. S.P. 16/386, no. 90). In 1697 glovers at Worcester stated that their employees were 'decrepit (and) unfit for any other Employment' (*Commons' Journals*, XII, 16).

[4] For the unskilled nature of the metal crafts see W.H.B. Court, *The Midland Industries*, p. 100; for cloth, E. Lipson, *Economic History of England*, II (6th ed. 1956), 57.

[5] Shoemakers probably kept a stock of shoes for casual customers and also executed orders. In 1562 shoemakers at Lincoln were forbidden to carry their goods around the countryside 'unless it shall be to any open fair, or to any gentleman or other honest person in time of necessity' (*Hist. Mss. Comm.* 14th report, Appendix 8, pp. 53–4). Northampton was showing signs of specializing as a shoe manufacturing centre in the sixteenth century (W. G. Hoskins, 'Provincial Towns in the Sixteenth Century', *Trans. Royal Hist. Soc.* VI [1956], 13) and by the late seventeenth century it was well known for its footwear. In 1662 Fuller wrote that 'the town of Northampton may be said to stand chiefly on other men's legs; where (if not the best) the most and cheapest boots and stockings are bought in England' (*Fuller's Worthies of England*, ed. P. A. Nuttall, II (1840), 498). It is not clear what special advantages Northampton possessed which encouraged the industry; Fuller's parenthesis suggests that the products of the area were inferior to footwear made to meet personal orders.

[6] i.e. where there were hides, bark, and water.

[7] In Worcestershire in the first half of the seventeenth century the location of shoemaking was correlated with the distribution of population while the location of tanning was determined by water and bark supplies (K. Mc. P. Buchanan, 'Studies in the Localization of Seventeenth

University of Melbourne

Century Worcestershire Industries, 1600–1650', *Trans. Worcs. Arch. Soc.* vol. 17, 44–48). In London the tanners were located outside the City limits in Bermondsey and Southwark where there was water from a number of small streams flowing into the Thames, and where the bark supplies of Kent and Surrey were reasonably easily accessible. The shoemakers were located throughout the City. In many towns tanning was situated on the outskirts rather than in the centre in order to prevent pollution of water supplies (e.g. A. Raine, *Medieval York* (1950), p. 282). See also *Records of the Borough of Northampton*, ed. J. C. Cox, II (1898), 289; Unwin, *Industrial Organization*, p. 128.

[1] Many glovers around London sold their goods to the City haberdashers (P.R.O. S.P. 16/386, no. 90). At the end of the seventeenth century Hereford glovers had a 'Wholesale Trade to London' (*Commons' Journals*, XII, 20).

Table 1. *Tanners' Inventories*

No.	Date	Name	Place	Value of craft goods.			Total value of estate (excluding debts).		
				£	s.	d.	£	s.	d.
1	16th C.	Edward Blake	Lincs.	6	18	4	13	6	8
2	,, ,,	Henry Wallis	Tattershall, Lincs.	73	0	0	137	6	10
3	1537	Thomas Whytwell	Lincoln	25	6	8	37	18	10
4	1541	Robert Wyllerton	Boston, Lincs.	118	12	10	176	3	1
5	1565	Richard Bayne	Gateshead, Co. Durham	22	4	0	29	3	2
6	1567	John Neall	Horncastle, Lincs.	770	6	8	1314	1	8
7	1588	John Chucking	Stamford, Lincs.	13	0	0	20	18	10
8	1595	Barnard Friends	Holland, Lincs.	70	10	0	99	5	0
9	1599	John Whiting	Horncastle, Lincs.	61	7	0	89	4	0
10	1599	Alexander Durne	,, ,,	20	10	0	24	1	10
11	1611	Thomas Clarke	Kimbalton, Hunts.	125	12	8	178	14	0
12	1616	John Doddington	Grantham, Lincs.	50	1	4	82	18	7
13	1616	William Dawson	,, ,,	261	0	6	322	3	0
14	1616	Robert Hanson	Grimsby, Lincs.	50	(approx.)		96	(approx.)	
15	1620	Samuel Lucas	Eleham, Kent	65	9	6	75	4	2
16	1621	—	Kent	154	0	0	250	0	0
17	1633	John Chamberlain	Bourne, Lincs.	80	3	4	127	0	6
18	1665	John Spenter	Enfield, Middlesex	65	12	0	72	16	0
19	1666	William Dodd	,, ,,	140	0	0	220	0	0
20	1681	Robert Burrill	Market Rasen, Lincs.	365	10	0	450	0	0
21	1689	Thomas Waylett	Writtle, Essex	479	14	8	542	3	5

References:

1 Lincs. A.O., Inv. 14/129
2 Lincs. A.O., Inv. 15/9
3 Lincs. A.O., Inv. 6/225
4 Lincs. A.O., Inv. 10/147
5 'Wills & Inventories III', *Surtees Society*, vol. 112 (1906), 30
6 Lincs. A.O., Inv. 85/147
7 Lincs. A.O., Inv. 74/736
8 Lincs. A.O., Inv. 83/304
9 Lincs. A.O., Inv. 91/205
10 Lincs. A.O., Inv. 91/181
11 Lincs. A.O., Inv. 108/113
12 Lincs. A.O., Inv. 118/135
13 Lincs. A.O., Inv. 119/396
14 Lincs. A.O., Inv. 118/293
15 Kent A.O., P.R.C. 10/47, no. 42
16 Kent A.O., P.R.C. 10/47, no. I
17 Lincs. A.O., Inv. 141/148
18 Gild Hall Mss. 9174, Box 2
19 Gild Hall Mss. 9174, Box I
20 Lincs. A.O., Inv. 182/514
21 F. W. Steer, *Farm & Cottage Inventories of Mid-Essex, 1635–1749* (Essex R. O., 1950), no. 152

Table 2. *Shoemakers' Inventories*

No.	Date	Name	Place	Value of craft goods			Total value of estate (excluding debts).		
				£	s.	d.	£	s.	d.
1	1566	Thomas Date	Kennington, Kent	1	0	0	10	3	4
2	1566	William Kempe	Faversham, Kent	4	16	0	10	5	4
3	1588	Edward Hodgekinson	Morton, Lincs.	4	3	0	30	9	1
4	1591	Robert ffyllippe	Leicester	3	15	4	11	0	0
5	1592	John Whiting	Horncastle, Lincs.	3	6	8	62	5	0
6	1593	John Philipson	Newcastle	1	17	8	51	9	4
7	1595	Thomas Coulson	Boston, Lincs.		8	2	5	11	0
8	1616	Henry Page	Great Chart, Kent	7	6	4	22	6	8
9	1620	Morgan Borman	Cranbrook, Kent	11	8	6	42	19	10
10	1620	John Miller	Sandwich, Kent	2	8	0	10	12	8
11	1622	Robert Bond	Kent	10	16	4	82	7	8
12	1633	Hugh Burditt	Grantham, Lincs.	5	16	5	8	9	4
13	1636	John Williamson	Boston, Lincs.	8	15	8	43	18	2
14	1637	Luke Jones	Leicester	7	12	0	16	13	0
15	1638	John Mowbray	Boston, Lincs.	17	19	4	120	5	5
16	1666	Thomas Herne	London	2	0	0	10	5	0
17	1666	Stephen Clerke	Waltham, Essex	6	10	0	35	2	0
18	1670	Edward White	London	43	14	0	90	6	0
19	1672	Francis Larnes	Spilsby, Lincs.	37	7	6	70	16	6
20	1673	John Loveday	Stamford, Lincs.	3	0	0	30	8	6
21	1675	John Eastwood	London	21	16	0	488	3	0
22	1681	William Oldfield	Saltfleet, Lincs.	1	18	4	33	8	4
23	1700	Charles Anderson	London	127	5	0	171	1	0

References:

1 Kent A.O., P.R.C. 10/2, fo. 26(b)
2 Kent A.O., P.R.C. 10/2, fo. 73(b)
3 Lincs. A.O., Inventories
4 Leics R.O., Inventories, Box 2891
5 Lincs. A.O., Inv. 83/770
6 'Wills & Inventories II', *Surtees Society*, vol. 38 (1860), p. 229
7 Lincs. A.O., Inv. 86/303
8 Kent A.O., P.R.C. 10/48, no. 201
9 Kent A.O., P.R.C. 10/47, no. 217
10 Kent A.O., P.R.C. 10/47, no. 29
11 Kent A.O., P.R.C. 10/47, no. 185
12 Lincs. A.O., Inv. 140/73
13 Lincs. A.O., Inv. 144/82
14 Leics. R.O., Inventories, Box 703, bundle 1637, no. 182
15 Lincs. A.O., Inv. 146/150
16 Gild Hall Mss. 9174, Box I
17 Gild Hall Mss. 9174, Box I
18 London R.O., *Common Sergeant's Book* 2, fo. 219(b), Box 6
19 Lincs. A.O., Inv. 174/208
20 Lincs. A.O., Inv. 174/210
21 London R.O., *Common Sergeant's Book* 2, fo. 379, Box 14
22 Lincs. A.O., Inv. 182/392
23 London R.O., *Common Sergeant's Book 2*, fo. 56(b), Box 34

Table 3. *Leatherdressers' and Glovers' Inventories*

No.	Date	Name	Place	Value of craft goods.			Total value of estate (excluding debts).		
				£	s.	d.	£	s.	d.
1	1563	Henry Patchett	Barrow-on-Soare, Leic.	5	16	0	(Missing)		
2	1599	William Thompson	Grantham, Lincs.	1	0	8	11	2	8
3	1599	Leonard Gyffothe	,, ,,	15	0	0	108	10	0
4	1610	Thomas Pigbone	Wye, Kent		1	0	3	12	4
5	1616	Robert Burton	Grantham, Lincs.	35	18	8	89	10	0
6	1618	Christopher Keples	Milton, Kent	4	7	0	62	13	3
7	1621	Robert Chapman	Bethersden, Kent	16	13	9	329	0	5
8	1636	Thomas Faukner	Holbeach, Lincs.	26	3	4	98	0	8
9	1638	Thomas Hareby	Bourne, Lincs.	10	0	8	24	17	4
10	1665	Thomas Pouter	Writtle, Essex	4	10	0	20	9	9
11	1680	Nathan Wade	Roxwell, Essex	2	0	0	—	—	—

References:

1 Leics. R.O., Inventories Box 1069, no. 96
2 Lincs. A.O., Inv. 91/103
3 Lincs. A.O., Inv. 91/110
4 Kent A.O., P.R.C. 11/1
5 Lincs. A.O., Inv. 119/403
6 Kent A.O., P.R.C. 10/48, no. 116
7 Kent A.O., P.R.C. 10/45, no. 165
8 Lincs. A.O., Inv. 145/92
9 Lincs. A.O., Inv. 147/102
10 F. W. Steer, *Farm & Cottages Inventories of Mid-Essex, 1635–1749* (Essex R.O. 1950), no. 149
11 *Ibid.* no. 116

LONG WAVES IN BUILDING IN THE BRITISH ECONOMY OF THE NINETEENTH CENTURY *

by E. W. COONEY

I

How good is the evidence for long waves of building activity in Great Britain and the U.S.A. during the nineteenth century? Can such fluctuations be seen clearly in data for the whole period? Or are they evident only in the latter part? And is the picture the same for both countries in this respect? Lastly, how are we to explain the inverse relationship – during at least part of the century – of the waves of activity in building in the two countries? The answers to these questions will obviously help to determine our explanation of long waves in building activity. More broadly, they will also influence our ideas about the relationship between the developing economies of the two countries since building accounted for a large part of domestic fixed investment at a time when Britain was exporting increasing amounts of capital and the U.S.A. was a large importer.

In recent years there has been considerable discussion of the long waves in building in the nineteenth century.[1] There can hardly be much doubt that during at least part of that time building activity was marked by fluctuations of about twenty years in length – certainly longer than the general business cycle. They can be seen in statistics for both Britain and the U.S.A.; and at least between 1870 and 1914 there is a substantial inverse relationship of the data for the two countries.[2] For the purpose of the present article I shall therefore take it to be reasonably well established that between 1870 and 1914 there were hyper-cyclical fluctuations in British and United States building activity and that these fluctuations show considerable inverse correlation. (For illustration see Figure II, p. 262).

II

The evidence about building activity before 1870 is on the whole a good deal slighter. This is particularly true of Britain between 1849 (when Shannon's index of brick production ends) and 1870 (when Cairncross's estimates of

---

* This article is based on a paper prepared for a seminar in nineteenth century British economic history at Oxford in summer, 1958. While I am of course responsible for the opinions expressed here the article owes much to stimulating ideas and criticisms from Professor H. J. Habakkuk, Dr R. M. Hartwell and the other members of the seminar. I was helped greatly, too, by subsequently reading an unpublished essay by Professor Habakkuk on residential building in the nineteenth century. My thanks are due also to Professor W. Ashworth for helpful criticisms.

B.

[1] A. K. Cairncross, *Home and Foreign Investment, 1870–1913* (Cambridge, 1953), especially Ch. II *passim* and pp. 187–8, 219–20 (subsequently referred to as Cairncross); Brinley Thomas, *Migration and Economic Growth* (Cambridge, 1954), especially pp. 102–3 and Ch. XI *passim* (subsequently referred to as Thomas); W. Arthur Lewis and P. J. O'Leary, 'Secular Swings in Production and Trade, 1870–1913', *The Manchester School of Economic and Social Studies*, XXIII (1955), 113–152.

[2] Thomas, Fig. 37, p. 176 and Tables 108 and 132.

investment in building begin). Even in the case of the U.S.A., where two indices based on building permits issued by cities are available, there is the difficulty that the number of cities providing information is small in the early years.[1]

Despite these difficulties Brinley Thomas, and Lewis and O'Leary, have concluded that a long building cycle, inversely correlated for Britain and the U.S.A., is evident not only after 1870 but also before. Lewis and O'Leary say that 'earlier in the century the alternation was already well established (the U.K. building cycle reached peaks in 1825 and 1847, and the American in 1836 and 1853)'.[2] And they go on to suggest, 'We cannot even rule out the possibility that the alternation of the U.S. and U.K. building cycles was a sheer accident, springing perhaps from the different effects which the Napoleonic Wars may have had upon the progress of residential building in the two countries.'[3] Thomas does not suggest that the cycles can be traced so far back but says they are observable, in inverse relationship, from the late 1840's.[4]

The first main point to be made here is that there does not seem to be enough evidence to establish the existence of a (roughly) twenty year building cycle in British history before 1870.[5] The second is that the well-demonstrated inverse relation of long cycles in British and American building between 1870 and 1914 arose from differences in the two countries' general economic development and opportunities for growth and was initiated by an unusual combination of circumstances in the 1860's, in which the American Civil War and its after-effects, and the aftermath of the British railway boom of the early sixties were important elements.

III

In reviewing the data of building before 1870 it will be convenient to look first at the period up to 1850 in order to comment on the generalizations made by Lewis and O'Leary. Here, much the best evidence about building activity in Britain is of course Shannon's index of brick production.[6] This suggests that from 1815 [7] there were major peaks and troughs roughly every ten, not every twenty years, until the end of the series in 1849. Admittedly, the definition of major cycles involves a judgment about the amplitude of the movements to be included, but surely it is not satisfactory to overlook the large expansion of brick production in the 1830's with twin peaks in 1836 and 1840. Yet it seems that only by doing so can one accept Lewis's and O'Leary's conclusion that there was a twenty year cycle from 1815 to 1850 with peaks in 1825 and 1847. Surely the more plausible conclusion is that the characteristic fluctuation in building in Britain in this period was a ten year cycle conforming pretty closely with the major movements of the general business cycle.[1]

---

[1] C. D. Long has provided an index which starts in 1856 with data from Philadelphia only, *Building Cycles and the Theory of Investment* (Princeton, 1940). J. R. Riggleman's index, used by Thomas and quoted in the present article, is from 'Building Cycles in the United States, 1830–1935' (unpublished thesis, Johns Hopkins University, Baltimore). An earlier, published version of this index starts in 1875 with figures from New York City, Chicago, Boston and St. Louis and builds up to a total of 52 cities by 1900, 'Building Cycles in the United States, 1875–1932', *Journal of the American Statistical Association*, XXVIII (1933).

[2] Lewis and O'Leary, *loc. cit.* p. 126.

[3] *Ibid.* p. 127.

[4] Thomas, p. 175.

[5] A similar opinion has recently been given by R.C.O. Matthews in *The Trade Cycle* (Cambridge, 1959), p. 222.

[6] H. A. Shannon, 'Bricks – A Trade Index, 1785–1849', *Economica*, new series I (1934), 300–18.

[7] The prolonged expansion of brick production from 1799 until about 1812 can be explained by wartime conditions. Shannon suggests a divergence between the 'market rate' of interest and the 'natural rate' once the Bank Restriction Act of 1797 opened the way for the Bank of England to lend more freely by means of the inconvertible paper currency while it still of course had to observe the five per cent limit on interest charges. With rents rising rapidly building must, he concludes, have been abnormally profitable (*loc. cit.* p. 313).

Thomas recognizes that an inverse relation of U.S. and British building cycles is not evident between 1830 (when the American data begin) and 1850; but he believes that it 'is clearly marked from 1847 to 1910'.[2] For the U.S.A. the evidence for long cycles in building is Riggleman's index from the 1830's supported by Long's from the mid fifties. While recognizing the rather narrow basis of these indices in their earlier years they may perhaps be accepted as representing the history of building in much of the U.S.A. In the British case, however, Thomas's use – for want of anything better – of railway building figures (in the form of miles opened per annum related to population) as an index of building activity as a whole seems very questionable. These data suggest a major fluctuation with its trough in 1855 between peaks in 1848 and 1863. They were used by Thomas to bridge the gap between Shannon's brick production index and Cairncross's estimates, i.e. 1849 to 1870.[3] Several comments can be made. Firstly, if evidence of total building can be found it is obviously preferable. Secondly, it seems likely that fluctuations in railway building at this time might differ from those in other forms of building if the demands on resources during the railway booms led to high costs and scarcity of labour and materials. Weber noted that house building in the 1840's was less than in either the 1830's or the 1850's but brick production was higher than in the 1830's.[4] Finally, rail mileage figures may not even be a good indication of building work done on the railways if the network created by the early years of the 1850's was not at first fully equipped with such structures as stations, warehouses, engine sheds and so on.[5] It seems therefore that the railway mileage figures are likely to mislead if they are used to link Shannon's index with Cairncross's. Can better evidence be found for this period?

IV

Although timber, as one of the most important building materials, is sometimes proposed as an index of building activity, and figures of imports are of course available, its disadvantages are evident. The main difficulty is of course that timber has other uses, such as furniture, packing, in mining as pit props, and on railways as sleepers; and these uses have been of growing importance in the total demand in the last century or so. The growth of coal production, for instance, was accompanied by a large increase in consumption of timber. The position is worse if import figures only are known and if there is no information about fluctuations in stocks. But the increasing and possibly independently fluctuating consumption of timber outside the building industry is the greatest difficulty.

---

[1] This is not to deny the possibility that within building activity as a whole there may have been hyper-cyclical movements in activity in particular sections such as housebuilding and railway construction which, however, tended to offset each other. Information is scanty but see B. Weber, 'A New Index of Residential Construction, 1838–1950', *The Scottish Journal of Political Economy*, I (1954), 114–15.

[2] Thomas, p. 175.

[3] Thomas, Table 132, p. 325.

[4] B. Weber, *loc. cit.* pp. 114–15. Increase in the stock of houses: *1831–1841*, 515,733; *1841–1851*, 313,341; *1851–1861*, 492,666.

[5] Shannon quotes Lardner's observation that in 1849 on most of the more recently opened railways the stations were incomplete and in some cases depots and other permanent buildings had not been commenced (*loc. cit.* p. 304).

A particular kind of timber, lathwood, does not seem to have this defect – at least not in anything like the same degree – and statistics of imports are available for 1832 to 1870.[1] Since lathwood, consisting principally of oak or fir prepared for division into the laths used as a base in roofing and plastering, was part of any buildings constructed along traditional lines (and these accounted for all but a very small proportion in nineteenth century Britain) its consumption probably varied closely with changes in building activity. That is not to say it is a perfect indication of changes in building activity. Apart from other possible uses, perhaps in packing, for instance, a change of emphasis in building work from, say, houses to factories and warehouses is likely to have meant a change in the consumption of lathwood because of differing proportions of the material used in the various kinds of buildings. There is the further difficulty that the available information consists of import figures only; but it seems likely that any home-produced supplies (which may well have been relatively small in view of Britain's long-standing deficiency in home-grown timber) fluctuated similarly to imports. Finally, the annual figures of lathwood (and other timber) imports show greater short-run fluctuations than are likely to have occurred in building work. No doubt these were the result of speculation.

The usefulness of lathwood imports as an indication of building activity can be tested by comparing them with brick production from 1832 to 1849. As Figure I shows, the two series conform pretty closely in their movements. The lathwood imports can therefore be accepted with some confidence when, in filling the gap between 1849 and 1870, they indicate that building in Britain did not undergo a long fluctuation of about twenty years length with its trough in the 1850's between peaks in the late forties and the early sixties.[2]

V

If the conclusion is correct – that there were no major fluctuations of greater length than the business cycle in British building activity down to the 1860's – what does the evidence suggest about the first major fluctuation? Here, data for London deserve attention. Building in the capital increased very steadily during the 1860's, apparently being little affected by the 1866 crisis. Then abruptly, in 1869, there was a large decline and the industry remained at a depressed level until 1876 when a substantial increase occurred.[3] The lathwood figures unfortunately end in 1870 but so far as they go they broadly agree with the London data (although showing much larger short-run movements) and they end with a sharp decline in 1870.

In the absence of lathwood import figures after 1870 imports of another kind of timber, mahogany, may be worth considering as a possible means of seeing

---

[1] Definitions of 'lath' and 'lathwood' which are contemporary with the import figures are as follows: 'Lath. A slip of wood used for various purposes in building, namely for hanging tiles and slates, and to form a ground for plastering. . . .' 'Lathwood. Wood prepared for subdivision into laths. . . .' The wood was generally oak or fir. *The Dictionary of Architecture*, ed. W. Papworth (The Architectural Publications Society, 1853–92), V.

[2] The relatively large trough in the 1840's, observable in the nine year moving average shown in Fig. 1, is an isolated phenomenon, not an indication of the postulated long waves. It recalls Weber's observation, already noted, that housebuilding was low in that decade, perhaps because of diversion of resources to railway construction.

[3] E. W. Cooney, 'Capital Exports, and Investment in Building in Britain and the U.S.A. 1856–1914', *Economica*, new series, XVI (1949), 347–354.

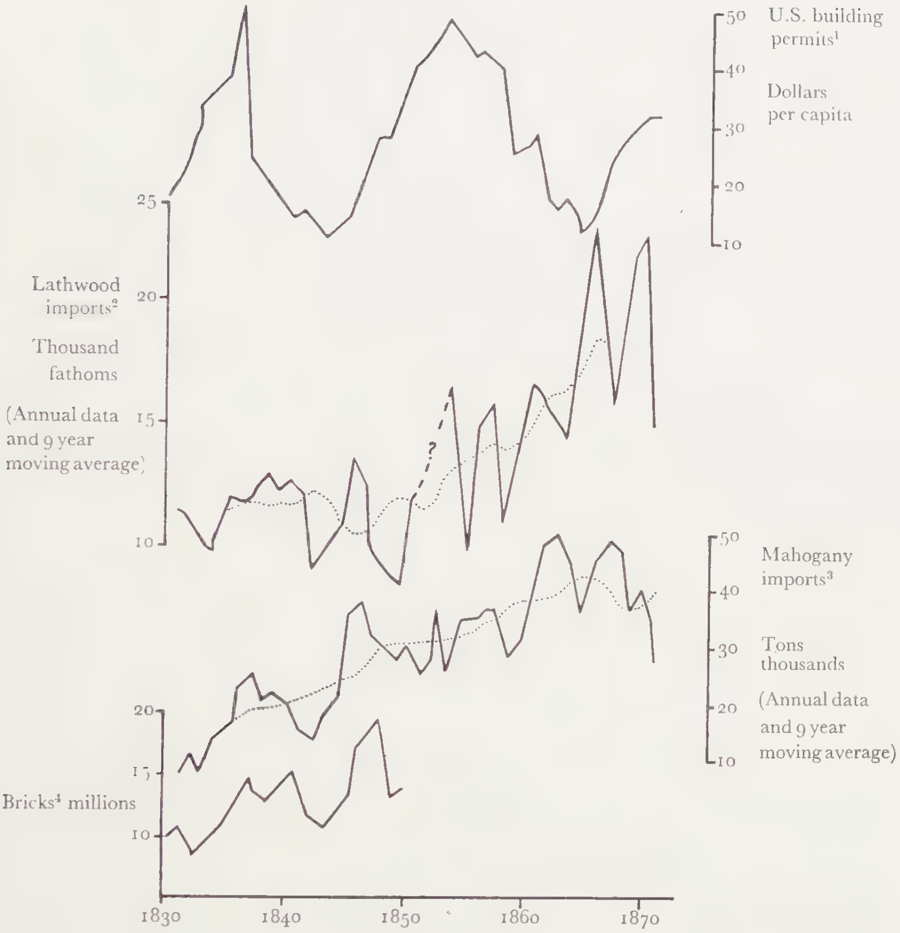

Figure I

what was happening to building in Britain during the years around 1870. As an index it is undoubtedly inferior to lathwood which was used in all kinds of buildings. Probably the main objections to mahogany are that it was confined to the better quality houses, offices, shops and public buildings and of course was also used in furniture. Against this, fluctuations in the data conform quite closely with movements in the lathwood series and in brick production (see Fig. I). It is therefore significant that mahogany imports confirm the initial impression, derived from London data, of a major slump in building in the early 1870's at a time when the economy generally was in the boom which reached its peak in 1873. Imports of mahogany were abnormally low in 1870–3, having declined erratically since 1867. They increased rapidly from 1874 (see Fig. II).

---

[1] J. R. Riggleman's index of annual building permits in the United States, 1831–1913 (dollars of 1913 purchasing power *per capita*), from Thomas, Table 108, p. 298.

[2] *U. K. Trade and Navigation Accounts.* For quantities see Table I, p. 269.

[3] *U. K. Trade and Navigation Accounts.* For quantities see Table II, p. 270.

[4] Shannon, *loc. cit.*

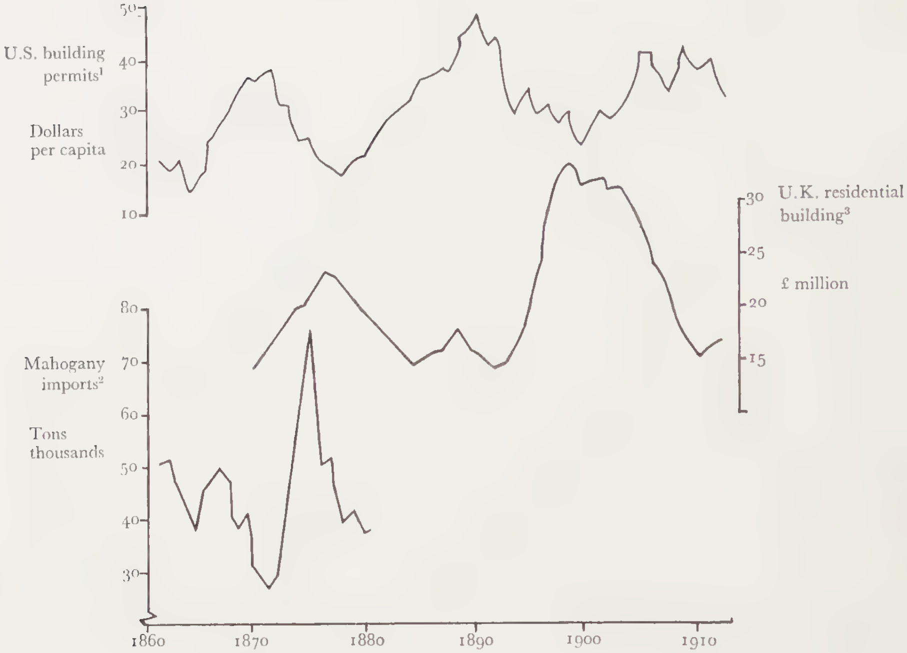

Figure II

Similarly, in four South Wales towns building activity after running at a high level in the earlier part of the 1860's declined greatly at the end of the decade and was depressed during the early 1870's.[4] Finally, Weber, using local authority records, noted that 'the town indices suggest a depression, varying in severity from place to place, in or before 1873'.[5]

The conclusion put forward therefore is that the onset of the long waves in building activity in Britain is to be traced to the contra-cyclical movement of building activity during the business expansion of the late sixties and early seventies and during the subsequent business decline of the years from 1873 to 1879. Such a thing does not seem to have happened before.

VI

What are the likely causes of this contra-cyclical movement in building and how is it connected with the occurrence of fluctuations of greater length than the general trade cycle? In considering this it is important to keep in mind that the long waves in building in Britain after 1870 were inversely related to similar fluctuations in American building and that the latter seem to have been occurring since the 1830's.[6] In addition, emigration from Britain and immi-

---

[1&2] For sources, see notes to Figure I.

[3] Value of residential building, 1870–1914, Cairncross, Table 35, p. 157.

[4] H. Richards and P. Lewis, 'House Building in the South Wales Coalfield, 1851–1913,' *The Manchester School of Economic and Social Studies*, XXIV (1956), 289–301.

[5] B. Weber, *loc. cit.* p. 127.

[6] On the long waves in American building, see in particular W. Isard, 'A Neglected Cycle: the Transport–Building Cycle', *Review of Economic Statistics*, XXIV (1942), 149–158. Also Thomas, Ch. X, *passim.*

gration into the U.S.A., and exports of capital from Britain between 1870 and 1914, show the long waves and are correlated with building activity in the U.S.A. [1] While it might be possible to work out an explanation of British building fluctuations between 1870 and 1914 which would be based on causes independent of these circumstances it is surely more realistic to take them into account.

In the light of the information and conclusions already given let us look at some of the possible causes of the British building fluctuations between 1870 and 1914. One thing seems clearly ruled out: the British fluctuations may have been caused in some way by the American but the opposite is impossible. We have concluded that there was no British long fluctuation before 1870 but we are accepting the evidence which indicates such fluctuations in U.S. building activity before that time. Some possible relationships are: –

1. Increases in foreign investment, associated particularly with the twenty year fluctuations in U.S. development, tended to reduce the supply of capital for building in Britain. In such situations building may not have been able to maintain its financial support because: –

(*a*) if new buildings were to be offered at higher rents they would have to compete with the existing stock, much of which was let at rents which could not be quickly increased – either because of long contracts or because, in the case of working class housing let on a weekly basis, landlords were reluctant to face the complaints and objections of tenants.

(*b*) foreign investment, in the form of easily negotiable government railway stocks and shares of various denominations, and the like, were in general preferred to the less readily negotiable mortgages for fairly large sums.

(*c*) even if, in the long run, the return on foreign investment was little more than on investment in building by means of loans, at times of expansion its prospects of profits may have seemed much brighter.

2. Building costs may have tended to be higher during periods of heavy foreign investment because at such times industry, especially the export trades, faced strong demands for its products and competed with building for materials such as timber, iron and lead, and for unskilled labour and some kinds of skilled labour (especially carpenters and joiners who could work in shipyards, railway waggon and carriage works and in factories making packing cases).

3. The increases in emigration from Britain at times of building activity in the U.S.A. reduced the supply of labour to the building industry, both by the departure of urban workers and by reducing the movement of trained builders and unskilled labour from rural areas and small towns to the main towns and cities.

4. The same increases in emigration reduced the demand for houses.

5. Conversely, when foreign investment and emigration were running at low levels, the British urban demand for houses and also for public works and buildings increased relatively fast and more labour and finance were available.

6. Insofar as the growth of real income fluctuated in periods longer than, or timed differently from, the general business cycle this would make for hypercyclical fluctuations in building activity.

These possible causes are no doubt not exhaustive but they provide a framework within which to discuss the onset and recurrence of the long building waves in Britain.

---

[1] Thomas, p. 111 and Cooney, *loc. cit.* p. 353.

VII

How did the first long wave in British building activity come about? I have already referred to an unusual feature of the very large trade cycle expansion of 1868–73: not only did building increase after the peak of the boom for some years but there is also evidence that it was depressed during the height of the boom.

Rostow has given a reasonable explanation of the tendency of building activity to run at a relatively high level for some time after a trade cycle peak. 'In general', he says, 'the nature of the trade cycle would suggest the likelihood that decisions to undertake long-term investment be concentrated disproportionately in the latter stages of expansion, rather than spread evenly throughout its course'. And 'the period of gestation of many types of investment was such that projects undertaken in the boom were not completed until some time after the turning point'.[1] But what one can see in London, in the four South Wales towns, in some of the towns in his index according to Weber, in mahogany imports, and hinted at in the lathwood imports, is an actual decline in building as the boom of the early seventies developed. While it was not unprecedented for the building industry to be busy for some time after the peak of a trade cycle expansion had been reached,[2] there seems no sign of an actual decline in building during earlier booms.

Why did building activity decline instead of sharing in the general expansion in 1868–73? I have set out in general terms some of the possible influences on the demand and supply of building. Is there evidence sufficient to show which of these possible influences was actually at work and which was the most important? While there is a great deal of circumstantial evidence, two things are at present lacking – details of the movements of rents [3] and information about loans to finance building, especially the value of mortgages and the rate of interest they bore. However, circumstantial evidence certainly suggests a number of factors adverse to a high level of building activity. Emigration, export of capital, and costs of production were all increasing, and the increase in the quantity and value of industrial output requiring finance by means of bank advances and bills may have been making the short term finance of building work more difficult and more expensive. But all this sort of thing had happened in booms before, yet building seems to have shared in those booms, judging by brick production and lathwood imports. Why should the boom of 1868–73 have been different?

The first things to notice about the expansion of that period are its magnitude and its very marked origin in overseas demand which, as Rostow has said, 'forced the system to full employment and virtually pure inflation ...'.[4] The external causes of this great boom need not be discussed in detail here; it will be enough to mention the more important. Probably the most important single factor was the American Civil War and its economic sequel. As Fels has put it: 'In 1865 the stage was set for one of the bursts of innovating activity such as Schumpeter described.' He goes on to make the following points. Because of depression and conflict, by the end of the Civil War nearly a decade had passed without any considerable railway building. The population was increasing rapidly, large areas west of the Mississippi were ripe for development, and many public authorities were very ready to encourage and assist railway promoters. Finally, at a time when immigration was increasing there was a shortage of housing.[1]

---

[1] W. W. Rostow, *British Economy of the Nineteenth Century* (Oxford, 1948), p. 55.

[2] In the late thirties and in 1846–7 brick production remained high for some time after the conventional cyclical peaks of 1836 and 1845 (*v.* Rostow, *loc. cit.* p. 33).

[3] Cairncross, p. 213, gives an estimate of rents for 1870 to 1914. He says (on p. 212) that 'average rents increased between 1870 and 1873 fairly rapidly'. His index shows a rise of two per cent.

[4] Rostow, *loc. cit.* p. 81.

Nevins has broadly summarized the extent of the change wrought by the great boom after the Civil War: 'Economically the nation of 1865 – a nation which had hardly advanced to the Missouri, which used iron alone, which had a modest railway system and but one and a half billion dollars invested in manufacturing – was a world away from the nation of 1878 – a nation which had pressed to the Pacific, which was producing huge quantities of steel, and which had invested nearly three billions in manufacturing.'[2]

This rapid American expansion was assisted by foreign capital, labour and commodities, much of which of course came from Britain. Jenks writes of the revival of British investment in American securities on a large scale at the close of the Civil War as being 'of the greatest importance in the rise of the American economic system'.[3] And *The Economist*, commenting in 1878 on the boom, took the view that the war 'had so crippled the resources of the Union in capital and people, that it was unable to sustain the vast railway extensions of 1868–73. The railways were made with native and foreign money and native and foreign credit.'[4] Russia, too, had entered into railway extension, 'straining all its resources and credit'.[5] Later in the boom there came the effects of the opening of the Suez Canal, especially in the form of a strong demand for steamships, and the French war indemnity of £220 millions to Germany with the subsequent boom in central Europe. The effect on the British economy can be seen in emigration, in foreign investment and in costs, including those of building.

There was a large increase in emigration from England and Wales and from Scotland in 1869 and further smaller increases every year to 1873 with the exception of 1871. Between 1865 and 1868 annual emigration from England and Wales ran at between 55 and 61 thousand approximately. The figure for 1869 was about fifty per cent higher at 90,000 and the peak was reached in 1873 with about 123,000.[6] While it is reasonable to suppose that such changes in the amount of emigration had some effect on building activity it may not have been as important as one might think at first sight. It does not seem safe to assume too readily that changes in emigration (or, for that matter, in internal migration) acted fairly quickly by increasing the demand for houses. It is necessary to consider what kind of people the migrants were. The majority were young and unskilled and therefore were also generally unmarried and poor. Such people do not provide a strong direct demand for new houses and their presence or absence in their parents' households or as lodgers in the homes of other people can hardly be seen as a major factor in causing immediate changes in demand for housing. The emigrants in the years around 1870 were predominantly of this kind – young and unskilled.[7] Their going, if it had any immediate influence on building, more probably did so by raising wage costs. But not too much should be made of this because building costs in fact were pretty steady until 1872.[1] Finally, whatever effect emigration did have underwent a fifty per cent increase in 1869 and this is particularly worth noting because in the same year there was also a large increase in foreign investment.

---

[1] R. Fels, 'American Business Cycles, 1865–79', *American Economic Review*, XLI (1951), 327.

[2] Allan Nevins, *The Emergence of Modern America, 1856–1878* (New York, 1927), p. 31. Also A. J. Youngson Brown, *The American Economy, 1860–1940* (1951), p. 47 and p. 77 *et seq.*

[3] L. H. Jenks, *The Migration of British Capital to 1875* (1938), p. 401.

[4] *Review of 1877*, 9 March 1878, p. 2.

[5] *Review of 1875*, 11 March 1876, p. 1 *et seq.*

[6] N. H. Carrier and J. R. Jeffery, *External Migration* (H.M.S.O. 1953), p. 92, Table C (1).

[7] *Ibid.* Ch. 7 *passim.*

In 1869, according to Imlah's estimates, net income available for lending abroad was £46.1 million compared with £32.9 million in the previous year.[2] *The Economist* at the time noted: 'During 1869, the transactions in American securities in London have been on a more extended scale than in any previous year, and values, with but one miserable exception are materially enhanced'.[3]

Of the several possible causes of the decline in building activity at this time this sharp rise in foreign lending seems most likely to have had the greatest and most immediate effect. I have already given reasons for somewhat discounting the immediate influence of the increase in emigration. By contrast, the increase in foreign investment in 1869 must have been very large in relation to the amounts of money which had been going into new building. Cairncross's estimates show the value of residential building in Great Britain in 1870 as £14.2 millions and loan expenditure of local authorities as £5.47 millions; altogether £19.67 millions. His estimate for all forms of new construction, a category extending beyond building in the conventional sense and comprising housebuilding, shipbuilding, railways, and work for local authorities, is £38.8 millions.[4] This figure is only meant to illustrate the orders of magnitude of the amounts likely to be involved for, while including items which are not the work of the building industry, it does not take account of industrial and commercial premises. The point to be made is that the £13 million increase in foreign investment in 1869 was surely large whether compared with the probable level of investment in building alone or in all forms of new construction. Could such an increase have failed to curtail the flow of funds into building, especially 'non-productive' uses such as housing where the stimulus of export orders could not be directly felt? While recognizing the lack of direct proof, it appears highly improbable. And if so, the same can be said of the boom period as a whole, because comparison of Cairncross's and Imlah's estimates of home investment and foreign investment respectively show that the latter increased much more than the former.[5]

To sum up: the conclusion is that a rise in building activity in the late 1860's was sharply checked by the competition of foreign investment for funds. This does not of course mean that investment in building was completely interchangeable with the several forms of foreign investment but simply that the capital market was sufficiently homogeneous for a substantial diversion to take place to the disadvantage of building, especially non-industrial building such as housing.

VIII

Let us now consider more broadly what is implied by this discussion and conclusion. We are, in effect, saying what has been said before from various points of view; that is, that the 1870's were a major turning point in the history of the British economy.[1] From the present point of view the most significant change is the emergence of foreign investment as a much more powerful influence on the economy than hitherto. From that time until 1914 much of home investment, and house-building in particular, had to take place predominantly when foreign investment was low. This is what happened – for the first time it seems – in the 1870's, after 1873, when industrial investment was substantial and there was a housing boom.[2]

---

[1] K. Maiwald, 'An Index of Building Costs in the United Kingdom, 1845–1938', *Econ. Hist. Rev.* 2nd. ser. VII (1954–55), 192. Table 1 shows (with 1930 = 100): 1867, 50.8; 1868, 50.1; 1869, 50.8; 1870, 51.6; 1871, 52.4; 1872, 57.4; 1873, 63.0.

[2] Albert H. Imlah, 'British Balance of Payments and Export of Capital, 1816–1913', *Econ. Hist. Rev.* 2nd. ser. V. (1952), 237.

[3] *Review of 1869*, p. 46.

[4] Cairncross, pp. 143, 157 and 169.

[5] Cairncross, p. 203, Table 46, and Imlah, *loc. cit.* p. 237.

Cairncross has discussed in detail the relationship between home and foreign investment, internal migration and emigration, and real wages in the longer period from 1870 to 1914 [3] and it is unnecessary to follow him here. One thing however may be noted. The hyper-cyclical fluctuations which appeared in British building in that period owed their timing and amplitude largely to the impact on British industry, by way of migration and foreign investment, of the succession of long waves which had marked the development of the American economy since the 1830's. But some part at least of the amplitude of the great British building boom centred on 1900 may be reasonably attributed to several factors which were independent of that influence. Briefly, these are the rise in real incomes between 1880 and 1900, the activity of local authorities in the reformed framework of local government, and innovations such as electricity supply and tramways. It would be difficult to argue that these, even taken together, are more likely than the overseas influence to account for the particular timing of the building boom of 1895 to 1905 but they surely added a good deal to its amplitude.

The story of building and foreign investment might have been different if there had continued to be major innovations at home comparable in their use of capital and promise of profits to the various applications of steam power and iron machinery in early and mid-Victorian times; but it has been convincingly argued that this was not the case.[4] The last significant railway boom – significant because it can be seen as the main source of business expansion at a time when the cotton industry was in difficulties – reached its peak in 1866 and the financial disasters in which it ended, brought about by contractors' promotion of lines which were never likely to justify themselves, are a well known story. As *The Economist* remarked: 'The effect of the panic of 1866 had been to shake our credit system more than any panic since 1847. Its effect was worse at first, and it lasted longer, than that of the panic of 1857.'[5] Investment in the economies of countries with greater untapped resources and less developed productive systems henceforth for forty years became the principal regulator of the course of the British economy. The long-term relationship can be summarily indicated by Cairncross's estimate that between 1875 and 1914 British foreign investment increased by about 250 per cent while home investment increased by only about 80 per cent.[6]

Ruskin College, Oxford

---

[1] For example, Cairncross, p. 2; W. Arthur Lewis, *Economic Survey, 1919–1939*, p. 74; W. W. Rostow, *loc. cit.* pp. 25–26.

[2] The effect was reinforced by the increase in real wages which rose by about one-sixth between 1870 and 1874 and remained at the higher level until 1880. At the same time rents are estimated to have increased by about five per cent during the 1870's, Cairncross, pp. 212–13.

[3] Cairncross, especially Chs. I and VIII *passim*.

[4] For example, Cairncross, especially Ch. I *passim*; and D. J. Coppock, 'The Climacteric of the 1890's: a Critical Note', *The Manchester School*, XXIV (1956), 22.

[5] *The Economist*, 31 December 1870, p. 1573.

[6] Cairncross, p. 4.

Table 1. *Imports of Lathwood into the U.K. 1831–1870.* [1]

Year	Fathoms [2]	Year	Fathoms	Loads
1831	11373	1852	14110	
1832	10876	1853	16671	
1833	10128	1854	12588	
1834	9799	1855	9611	
1835	12142	1856	15579	67301
1836	12091	1857	16922	73103
1837	12145	1858	10911	47136
1838	13337	1859	14842	64117
1839	12782	1860 [4]	17269	74594
1840	12972	1861	16664	72989
1841	12685	1862	15655	66631
1842	9063	1863	14767	63796
1843	10440	1864	20118	86913
1844	11418	1865	24303	104992
1845	14488	1866	18771	81091
1846	12872	1867	15960	68949
1847	10004	1868	22493	97170
1848	9031	1869	23944	103439
1849	8750	1870	15398	66522
1850	12195			
1851 [3]				

[1] Source: *U. K. Trade and Navigation Accounts.*

[2] One fathom equalled 216 cubic feet.

[3] The figure for 1851 was not published. A nominal 13,000 fathoms was assumed for construction of the moving average in Figure I.

[4] From 1860 the quantities were given in loads only. For 1856 to 1859 measurement was in both fathoms and loads. For the purpose of this table loads have been converted into fathoms for 1860 to 1870 at the rate of 4.32 loads per fathom.

Table 2. *Imports of Mahogany into the U.K. 1831–1880.*[1]

Year	Gross Imports Tons	Re-exports [2] Tons	Net Imports Tons	Year	Gross Imports Tons	Re-exports [2] Tons	Net Imports Tons
1831	11541			1856	39751	1721	38030
1832	15864			1857	41038	2460	38578
1833	11818			1858	33481	2128	31353
1834	16957			1859	35701	1211	34490
1835	19087			1860	44710	2292	42418
1836	26710			1861	53108	2617	50491
1837	28640			1862	53798	2568	51230
1838	23336			1863	47998	3311	44687
1839	25859			1864	41008	3201	37807
1840	23115			1865	51376	4922	46454
1841	18439			1866	53458	2871	50587
1842	16938			1867	52737	3560	49177
1843	20284			1868	41925	3428	38497
1844	25622			1869	47252	3482	42870
1845	38350			1870	32732	3345	29387
1846	40238			1871	29335	2753	26582
1847	34009			1872	33920	3120	30800
1848	31668			1873	53330	2536	50794
1849	29012			1874	64674	4029	60645
1850	33650			1875	80705	3203	77502
1851	27545			1876	52461	1635	50726
1852	41090			1877	53600	2092	51508
1853	27495			1878	44227	3568	40659
1854	37676	722	36954	1879	45154	2256	42898
1855	37954	1403	36551	1880	41349	2470	38879

[1] Source: *U.K. Trade and Navigation Accounts.*

[2] Not published before 1854.

WEHRWIRTSCHAFT: A GERMAN CONTRIBUTION TO ECONOMICS

by WALTER M. STERN

I

War touches national economies at a number of points. These contacts constitute a modern phenomenon: as long as wars amounted to limited engagements involving only regular forces, the civilian population was hardly affected. Though the Grand Alliance of 1689 declared the destruction of French commerce its object and prohibited all neutrals from trading with France,[1] proclamations of this kind amounted to little more than declarations of intention: neither the strength of the belligerents nor the duration of the conflict sufficed to make them effective. Napoleon's *levée en masse* recruited the country's whole young manhood, thus greatly extending the sector of population directly affected by war, but only by turning it from civilians into combatants. At the same time blockades became more effective – indeed, had to be effective in order to qualify for neutral recognition – and restricted supplies reaching civilians,[2] but not until the twentieth century could land frontiers be effectively closed. The same century saw the full impact of war on national economies because its national conflicts became collisions of peoples rather than of forces; while continuing to exist in law, the distinction between combatants and civilians became blurred in practice. It has been argued [3] that no national, but only regional economies existed up to the end of the eighteenth century, while the nineteenth century passed at one leap to an international economy, and that the total warfare adopted in the twentieth century compelled economies for the first time to operate on a national basis. Such an interpretation does less than justice to national tariff and fiscal policies of countries like Spain in the sixteenth or the Netherlands in the seventeenth and eighteenth centuries, France under Colbert or Britain before the free trade era, but applies rather to territories like Germany and Italy which did not become nations until later in the nineteenth century, or to the United States which required a civil war in order to reach national agreement on policy.

Long before hostilities are contemplated, there may be economic causes which could motivate a war. As antagonism grows, countries resort to economic preparations for war which result in economic mobilization the moment war breaks out. Once a state of war exists, a war economy has to be established and managed; moreover, modern hostilities involve economic warfare, an activity concerned as much with strengthening the home economy as with disrupting the enemy's. At the conclusion of peace, economic demobilization accompanies that of military forces; a period of reconversion to peace precedes the re-establishment of normal conditions. On most of these stages of contact between the national economy and war, research work has been done, much of it available in English.[1] Several countries in the later 1920's and 1930's passed laws embodying economic mobilization plans and laying down priorities, notably the United States, France and Czechoslovakia.[2] Official war histories of many countries testify to the extent to which these plans were translated into practice; they also form our main source of information for the management of the war economy in belligerent countries. The outbreak of the second world war stimulated considerable interest in the past of economic warfare: Professor Jack traced the subject, in both its economic and its legal implications, from the first Armed Neutrality of 1780 to the first world war,[3] while a spate of works appeared early in the war to discuss current aspects.[4] An admirably full analytical treatment, based on the experience of the second world war, has more recently come from the pen of Mr Wu, while Professor Medlicott has devoted two volumes to the British economic blockade.[5] The story of beating swords into ploughshares is mostly encountered in the periodical literature or in the last chapters of official war histories.[6]

---

[1] Gustav Schmoller, 'National Economic Unity', in J. Maurice Clark and Others (eds.), *Readings in the Economics of War* (Chicago: Univ. of Chicago Press, 1918), p. 8.

[2] This is not the place to discuss to what extent the definition of contraband at various periods in the nineteenth century included commodities which might be consumed by civilians. D. T. Jack, *Studies in Economic Warfare* (London: P. S. King, 1940) deals fully with the development of the concept of contraband.

[3] By Kurt Wiedenfeld, *Die Organisation der Kriegsrohstoffbewirtschaftung im Weltkriege* (Hamburg: Hanseatische Verlagsanstalt, 1936), pp. 9–10.

II

This leaves the subject of economic preparation for war. Though we have Adam Smith's authority for the principle that defence is of much more importance than opulence,[7] no nation in 1914 was prepared for war on the economic front. Adam Smith at the time had justified the retention of the Navigation Laws, in spite of the loss of economic opportunities entailed. Neither he nor any of his successors advocated a systematic study of measures by which a country would prepare its economy for war. Even the Germans took only very hesitant steps in this field. A contemporary of Adam Smith, Frederick II of Prussia, like the true paternalist ruler he was, always kept economic problems in mind while conducting his multifarious wars, an interest which found expression in his political testaments.[8]

In 1899 for the first time a whole book[9] was devoted to the social and economic determinants of military power. That the Germans reprinted it in the early 1930's shows the initial poverty of material in this field. General of Infantry von Blume, its author, was little more than a knowledgeable German version of Colonel Blimp with rather elementary ideas on subjects like religion, discipline and virtue. He had however grasped that a country's social structure had some bearing on its military efficiency; as a military expert he realized the effect of population pressure and social conditions or the absence of a middle class (for which he quoted the Russian example) on military recruiting, but found himself in deep water when devising measures of social amelioration. In discussing war transport, he dealt not only with railways, as had been fashionable among Germans ever since the days of Friedrich List and Helmuth von Moltke, but devoted attention to the conditions in which a peacetime economy would provide and maintain the number of horses which the armed forces required at the outbreak of war. He realized that, though food for the armed forces had to be accorded absolute priority, there was a limit beyond which one could not starve the civilian population. He criticized the German economy for devoting excessive resources to industry which exported much of its output and would therefore at the outbreak of war suddenly find itself without markets or employment for its workers, while neglecting agriculture which not only could render the country independent of food imports, but in the event of war would continue to provide employment and incomes for persons engaged in it.[1] Count Schlieffen, Chief of the Prussian General Staff, published an article *Der Krieg in der Gegenwart* in 1909.[2] While aware of the economic difficulties raised by war, he did not know that an economy could be guided or even managed, but was content to accept it as a limiting factor on the ambition of military commanders. This was as far as systematic studies of the economic preparation for war went up to 1914.[3]

---

[1] Lionel C. Robbins, *The Economic Causes of War* (London: Jonathan Cape, 1939); Achille Loria, *The Economic Causes of War* (Chicago: Kerr & Co., 1918) – to be recommended for some factual information contained in it, though not for its discussion of the subject.

[2] Critically discussed, as regards the United States and France, by Justus Schmitt, *Kriegswichtige Industrie im System der Wirtschaftspolitik* (Berlin: Obelisk-Verlag, 1937), as regards Czechoslovakia, by Ernst Hoch, *Die Wehrkraft der Wirtschaft* (Hamburg: Hanseatische Verlagsanstalt, 1937).

[3] D. T. Jack, *op. cit.*

[4] E.g. Paul Einzig, *Economic Warfare* (London: Macmillan, 1940); Antonin Basch, *The New Economic Warfare* (London: Routledge, 1942).

[5] Yuan-Li Wu, *Economic Warfare* (New York: Prentice-Hall, 1952); W. N. Medlicott, *The Economic Blockade* (London: History of the Second World War, United Kingdom Civil Series; H.M.S.O. and Longmans, I, 1950; II, 1959).

[6] Cf. also J. M. Clark and Others (eds.), *op. cit.* pp. 628 *et seq.* (editorial).

[7] *Wealth of Nations* (Everyman ed., 1947), I, 408.

[8] Quoted from Kurt Hesse, *Der kriegswirtschaftliche Gedanke* (Hamburg: Hanseatische Verlagsanstalt, 1935), pp. 12–13.

[9] W. von Blume, *Die Grundlagen unserer Wehrkraft* (Berlin: Ernst Siegfried Mittler & Sohn, 1899).

During the first world war, immediate economic problems overshadowed the wider issues, though at least one German economist demanded the teaching of the economics of war as a separate branch of economic science.[4] As late as 1918, an American could still believe that no greater government activities than substantial pecuniary rewards – he mentioned bounties and protective tariffs – were called for to encourage the production of military necessities at home.[5] Enquiring into the problem of restoring the American economy to a peacetime basis, the editors of *Readings in the Economics of War* asked themselves whether this peace would amount to a mere armed truce, in which case the industrial system had to remain geared to switch back to war production at any moment; if peace promised to be enduring, the economy could be converted unreservedly to the production of wealth and welfare.[6] Here the outline of the new problem was perceived.

At the same time Freiherr von Willisen, exchanging field-grey uniform for an academic gown, sadly reflected on economic warfare, then for the first time a powerful determinant of victory; his book [7] suffers from failure to distinguish between the means and ends of economic warfare. That economic warfare had lost them the first world war was generally assumed by German writers, except those who for publicity purposes persisted in the 'stab-in-the-back' legend or sought to exonerate themselves for their conduct of military administration.[1] It created a deep impression. Germans decided that never again should economic weakness lose them a war. A strong male-voice choir chanted variations on the theme by Adam Smith, accompanied in a minor key by the Clausewitz *motif* that war is merely the continuation of diplomacy by other means. It was open to politicians to argue that economic strength devoted to the preparation of military action in peacetime should have priority over the maximization of purely economic advantages; economists were to develop a science devoted to the study of this task.[2] This was the birth of *Wehrwirtschaft*.

---

[1] Cf. esp. pp. iii, 6–22, 64, 98–103, 114, 116–19.

[2] Quoted from Hesse, *op. cit.* pp. 12–13.

[3] W. K. Hancock and M. M. Gowing, *British War Economy* (London: History of the Second World War, United Kingdom Civil Series; H.M.S.O. 1949), p. 3.

[4] Hesse, *op. cit.* pp. 18, 23–7; Friedrich Lenz, *Macht und Wirtschaft: Die Voraussetzungen des modernen Krieges* (Berlin und Stuttgart: Deutsche Verlagsanstalt, 1916).

[5] C. E. Ayres, 'The Dependence of War upon Economic Organization', in J. M. Clark and Others (eds.), *op. cit.* p. 102.

[6] *Ibid.* p. 628 (editorial).

[7] *Begriff und Wesen des Wirtschaftskrieges* (Jena: Gustav Fischer, 1919).

III

But we anticipate. The majority of the German population in 1918 was as war-weary as in other belligerent countries. Studies devoted to economic preparedness for the renewal of military action did not prove popular; indeed, they were not even academically respectable. Historians investigating past power conflicts might legitimately concern themselves with economic causes of the weakness or strength disclosed by such struggles, but the only other scholars systematically studying such problems at academic level were military specialists teaching at the Prussian War Academy or the Academy of Military Technique, which was closely associated with the Berlin Technical University. Of non-specialists, a few holders of high positions in military administration during the world war, who had since resumed their civilian occupations, deduced from their war experience the need for a more conscious direction of the national economy if capacity to wage war was to be increased. 1926 saw the appearance of an anonymous study (probably from Kurt Hesse's pen) entitled *Foreign Countries' Economic Preparation for Future War*, but the expressions *Wehrwirtschaft* and its concomitant *Wehrwissenschaft* – the systematic study of the subject – were not coined until 1929.

Germany was worse hit by the great slump of 1929–1933 than most other Western European countries. With an economy weakened by a runaway inflation and subsequent deflationary policy which had led to mass unemployment, she found herself especially vulnerable to the exclusion of her exports from foreign markets and the consequent dangerous depletion of gold and foreign currency reserves. She instituted raw material allocation and import control; thus her peace economy in the 1930's came to look similar to the war economy of fifteen years earlier. These circumstances prompted studies how to render such an economy capable of war; they received full publicity early in 1935 when Germany unilaterally repudiated that part of the Versailles Treaty which limited her armaments; once military preparation had been openly admitted, economic preparation for war was a logical corollary.[3]

A semantic controversy obscured the inauguration of this new branch of economics. Several writers, above all Binz, complained that *Wehrwirtschaft* and *Wehrwissenschaft* were universally mistaken for military economy and military science, not only at home, but by foreign readers who translated them in this form or as *science de guerre*. Binz objected strongly to this interpretation, contending that *Wehrwirtschaft* related to national defence, not war. He weakened his case by also arguing that attack was the most effective form of defence, thus reducing the whole controversy *ad absurdum*, but based himself mainly on the etymological derivation of the prefix *Wehr* which he described as bearing a purely defensive connotation, though admitting that it had been used in the past to camouflage aggressive activities. This etymological argument is spurious. *Wehr* in itself has neither an offensive nor a defensive bias; to indicate defensive use, the word *Abwehr* is employed (even this serves to denote the German Army Intelligence Corps in all its activities, aggressive as well as defensive). Nor is it necessary, when surveying the controversy with the hindsight of 1960, to be overmuch impressed by the German argument – not perhaps as much as the *Journal de Genève* which, according to Binz, in 1934 frequently translated *Wehrwissenschaften* as *sciences de défence* (*sic*).[1] Whatever the German reality of the 1930's, a science of economic preparation for military action on a purely defensive basis is at least conceptually possible. In order not to prejudge the issue of offensive or defensive policy, we shall therefore translate *Wehrwirtschaft* and *Wehrwissenschaft* as -fensive economy and -fensive science.

---

[1] Otto Korfes, *Grundsätze der Wehrwirtschaftslehre* (Hamburg: Hanseatische Verlagsanstalt, 1936), pp. 12–14; Hesse, *op. cit.* p. 30.

[2] E.g. Hoch, *op. cit.* p. 9; Gotthold Muhlner, *Bevolkerungsentwicklung unter kriegswirtschaftlichen Gesichtspunkten* (Hamburg: Hanseatische Verlagsanstalt, 1935), p. 44; Korfes, *op. cit.* pp. 16–20.

[3] Gerhard L. Binz, *Die Erforschung der Wehrgrundlagen* (Munich: E. Dupont, 1935), pp. 5, 6, 9; Hesse, *op. cit.* pp. 29, 32, 35, 36.

A -fensive economy is a peacetime economy brought to, and maintained in, a state of preparedness for war: -fensive science comprises all studies of the technique required to achieve a -fensive economy. In spite of prolonged discussion, German writers never clarified the exact meaning of *Wehrwirtschaft*;[2] instead, they surrounded this uncomplicated concept with an array of elaborate definitions. Hesse at least sees in it nothing more than research which

> serves to ascertain and mobilize intellectually all economic resources necessary for warfare, and marks the limits of possible achievement,

whereas Schleich renders its scope both wider and vaguer by describing it as

> the economic and sociological bases of -fensive ability.

Similarly Warlimont begs the question in calling it a

> dynamic principle which embraces peace and war economics for the purpose of armed defence.

The simplest and most straightforward definitions are those of Beutler and Scherbening:

> *Wehrwirtschaft* is a will and endeavour which aims at superiority over the enemy in a future war in the economic field and by economic methods;
> *Wehrwirtschaft* is a national economy seen from the viewpoint of efficiency in a future war.

Ewald Banse proceeds by enumeration; to him it means

> knowledge of countries and peoples – especially one's own and those of the neighbours – of their space and economic achievement, of their transport effectives and their psychology, for the purpose of creating conditions as favourable as possible for future wars to be conducted for the existence of the home population.

Binz himself, after all the trouble he has taken to clarify the concept of -fensive science, obscures the picture by an excess of jargon, calling it the

> knowledge of the system of relationships of all factors conditioning or affecting national defence, unless they fall into the field of military research;

weakening his definition moreover by making it dependent on exclusion. How much simpler to follow Spiegel, an American writer of European origin, and call it purely 'the economics of the military (alternatively: of the garrison) State'![1]

---

[1] Binz, *op. cit.* pp. 12–14 (esp. n. 28), 34 (esp. n. 105).

[2] Albert T. Lauterbach, *Economics in Uniform* (Princeton: Princeton Univ. Press, 1943), p. 30.

Binz goes on to classify the syllabus of -fensive science. He summarizes it under four general headings: -fensive population science comprises sociology, biology and psychology in their application to preparedness; under the heading of the knowledge of the -fensive State he groups history, policy, ethics and law; -fensive space science includes geography, meteorology, communications, geopolitics and – somewhat surprisingly – economics, whereas the science of -fensive materials provides for natural sciences by dealing with physics, chemistry and technology.[2]

IV

Classical economists had treated crises as exceptional and abnormal states of the economy, part of short-term phenomena which caused deviations from the long-term trend towards equilibrium, or even of those 'other things' which ought always to be equal, but in practice rarely complied with this injunction. More modern authors have adopted a more dynamic analysis, studying the causation of crises and the possibility of their being inherent in and inseparable from a market economy. Only very determinedly Marxist interpreters[3] however have been prepared to include wars among crises which constitute consequences rather than causes of economic development. German writers of the -fensive economy school balance uncertainly on the brink of this interpretation, buoyed up by Clausewitz. They reject the view that war signifies an exceptional or unhealthy condition of the economy, but look upon it as one of the major developmental factors, an opportunity, if not – and here it becomes effect rather than cause – a necessity for a virile economy. This is best expressed by Winschuh:

> On principle we have ceased to recognize a fundamental difference between a peace and a war economy. We do not look upon peace and war economy as fundamental contrasts, just as in the political and diplomatic field peace and war are no more than the changing phases of a national activity always directed at an unchanging aim. According to this view, a war economy represents nothing abnormal, but a different, though highly concentrated, comprehensively planned and avidly consuming form of economy.

In similar terms Benito Mussolini addressed his Supreme Committee for Self-Sufficiency when war in Europe had already begun:

> The distinction between a war and peace economy is simply absurd. There is no such thing as an economy of peacetime and an economy of wartime. There is only a war economy because, historically, on the basis of the number of years of war, it is proved that the state of warfare is the normal state of the peoples, at least of those living on the European continent, and because even in the years of so-called peace other forms of warfare are practised which, in turn, prepared for armed warfare.[4]

---

[1] Hesse, *op. cit.* pp. 43–4; Korfes, *op. cit.* p. 23; Bernhard Schleich, *Wehrgedanke und Staat* (Berlin-Grunewald, 1934), p. 192; Lt.-Col. Walter Warlimont, 'Volk und Wehrwirtschaft', in *Jahrbuch der Deutschen Gesellschaft für Wehrpolitik und Wehrwissenschaften*, 1936, p. 27; Major N. Beutler, 'Wesen, Aufgaben und Begriffe der Wehrwirtschaft', in *Militärwissenschaftliche Rundschau*, Oct. 1937; Colonel Eberhard Scherbening, *Wirtschaftsorganisation im Kriege* (Jena, 1938), p. 8; Ewald Banse, *Geographie und Wehrwille* (Brunswick, 1933), p. 246, as quoted by Binz, *op. cit.* pp. 29–32. Binz's own definition *ibid.* p. 22; Henry William Spiegel, *The Economics of Total War* (New York: D. Appleton Century Co. Inc., 1942), p. 41.

[2] Binz, *op. cit.* pp. 41–59. The -fensive State (*Wehrstaat*) is a concept which Binz claims to have brought into being in an article published in the *Völkischer Beobachter* in 1927, cf. p. 47.

[3] George Garvy, 'Kondratieff's Theory of Long Cycles', *Review of Economic Statistics*, vol. XXV, 4 (1943), pp. 203–20.

[4] Korfes, *op. cit.*, p. 20; Hoch, *op. cit.*, p. 9; Josef Winschuh, *Gerüstete Wirtschaft* (Berlin: Frundsberg-Verlag, 1939), p. viii; Mussolini's speech of 18 Nov. 1939, quoted in *The Times*, 20 Nov. 1939.

A national economy which at all times gives preference to preparedness for war over mere maximization of economic advantages is very congenial to totalitarian politicians and writers. No economy relying purely on market forces will of itself acquire the characteristics of a -fensive economy; this pattern of priorities can be imposed only by planning and direction on the part of the State. Such direction serves as a training of the economy; just as a military formation is hardened by means of route marches and manoeuvres, so a -fensive economy can be toughened by subjection to successively heavier tasks which simulate or resemble war conditions. Welfare is a concept on which economists have made only limited inroads; it can be defined as anything which politicians consider good for the country. Hence on the plea that readiness to give a good account of itself in -fensive action is basic to national well-being, these authors demand State direction of the economy as part of a public welfare policy. It provides them with yet another justification for an overall economic plan which is far more easily imposed within the framework of a totalitarian than of a democratic system. As Winschuh points out,[1] all States can conclude trade treaties, but these merely create opportunities for the exchange of commodities or services. A liberal State lives in the hope that private individuals will translate these opportunities into business transactions; if its traders do not choose to buy or sell in the other contracting country, such treaties remain empty boxes. Only totalitarian States, either trading on their own account or applying compulsion to men or organizations licensed to trade, can guarantee that their trade treaties will be implemented to the full.

Once there was no further need to camouflage German military preparations, the group of writers concerned with studies of the -fensive economy started a series of treatises entitled Studies of War Economic Research and Training (*Schriften zur kriegswirtschaftlichen Forschung und Schulung*), published by the *Hanseatische Verlagsanstalt*, Hamburg, between 1935 and 1938. Kurt Hesse, to whom reference has been made in these pages, acted as editor, contributing himself a discussion of the principles involved and a case study.[2] This is what the publisher's blurb had to say about the purpose of the series:

> The studies of war economic research and training pursue the aim of discussing the problem of a war economy in its totality. Experience of the world war and the special war economic preparations of all great powers prove that an urgent task falls to be performed; up to the present only individual studies exist in this field which lacks comprehensive consideration of the numerous questions of a war economy.
>
> Starting from an enquiry into the spiritual foundations of the German war economy, passing *via* the problem of raw materials in its different manifestations, the industrial mobilization properly speaking and enquiries into the tasks of employers and workers, the formation of wages and prices and the possibilities of financing war, to the problem of distribution and responsible leadership, there is a plethora of material awaiting authoritative treatment which in turn would stimulate economic life and its conscious direction in peace and war.

The treatises were to be statements possessing general validity. However, one of the inherent features of a -fensive science is that circumstances alter; it has to adjust its findings currently to a changed environment. A second series, consisting of annual reports, was to serve this need; not every foreign country could be surveyed every year, but by dividing countries into groups, changes in their -fensive aspects would be periodically recorded. Thus, Italy, Czechoslovakia, Poland, Roumania, Yugoslavia and the Soviet Union enjoyed the privilege of consideration in the first report, issued in 1936; the next year saw a report on Britain, France, Scandinavia, Belgium, Holland and Switzerland, whereas the report for 1938 shifted the focus to countries outside Europe, notably the United States, Japan and China.[1]

---

[1] *Op. cit.* pp. 112–14. Cf. also p. xiii.

[2] *Der kriegswirtschaftliche Gedanke* (1935) and *Kriegführung und Kriegswirtschaft im Feindesland* (*Lehren des Feldzugs in Rumänien 1916/17*) (1936).

For reasons of national security, it was not considered safe or advisable in the treatises to discuss topics with reference to current German practice: even in fields as open to general scientific research as demography, the specialist in this series suggested that results of certain enquiries should be made available to the national authorities concerned, but preferably not published. The author was thinking of such conclusions as that within the current quarter of a century the largest number of males aged twenty would be available for military service in 1940,t hus indicating the year in which Germany would find it most convenient to wage war.[2] If expediency precluded reference to present home conditions, how could the authors deal with their topics? Three possibilities existed: on a purely theoretical basis, or illustrated by examples, but drawn either from the German past or from the current practice of other countries.[3] Such was the scheme which contributors followed in subsequent years. Only two works dealt with their subjects theoretically,[4] but seven authors were inspired by historical examples to write about transport and communications, power generation, statistics, finance, population and the control of raw materials in general and of fats in particular during the first world war.[5] At least one of the authors doubted the value of such treatment: Professor Wiedenfeld pointed out that, as regarded raw material control, the first half of the 1914–18 war provided no adequate guidance to the problems arising in the second half, the third year of the war made demands very different from the fourth; implicitly, his treatise must have appeared to him as a historical account rather than a contribution to research on current war preparedness.[6] Foreign case studies formed the subject of three contributions to the series: Hesse dealt with economic control in occupied territories by drawing illustrations from the German conquest of Roumania in the first world war; Fetzer discussed the mineral oil policy of great powers with special reference to Japan; Hoch made a general survey of Czechoslovak war potential.[7] By the time war broke out again, a substantial collection of -fensive science data had been assembled.

Nothing similar existed in Britain, France or the United States, at all events before 1938. Public opinion in these countries did not favour, let alone demand, activities which would have rendered their economies less vulnerable to war; such endeavours would have been considered as war-mongering. When the British government in 1931 set up an Industrial Intelligence Centre to study reports on the industrial and economic preparedness of foreign countries to wage war, it kept its existence a secret for the first four years.[1] 1935 marked a watershed in British defence: up to that date preparations, such as they were, had constituted no more than a leisurely academic exercise. By 1935, events in Europe had sufficiently alarmed public opinion to impart to defence measures a character of urgency and to elicit quantified decisions.[2] But even when Britain and the United States took the threat of war seriously, their system of economic defence differed from the German. Shadow factories in Britain, industrial mobilization in the United States, were superimposed upon, not substituted for, the normal economic structure. They continued to consider a strong peace economy not only a spur to international security, but also the best method of ensuring economic preparedness.[3] British memories of the first world war led to a detailed scheme in one particular sector, that of food distribution, but the first body set up to survey in their entirety economic plans prepared for the possibility of war did not begin to function till the summer of 1939.[4] When one of the veteran administrators of the first world war, a man with a memory longer and better than most, Sir Arthur Salter, pointed out in 1939 the need for an island involved in war to economize in shipping space and therefore urged stockpiling in peacetime of bulky essentials, such as iron ore, grain and timber, his proposals were not implemented to any great extent; difficulties seemed too great, the disturbance to current trade too high a price to pay.[5] It was only after war had actually broken out that a politician, not at that time in the first flight of prominence, reminded his fellow countrymen:

---

[1] Hoch, *op. cit.* pp. 7–8, 64. The writer has not seen the annual reports and does not know whether the 1938 report in fact appeared.

[2] Mühlner, *op. cit.* pp. 34–5, 42–3.

[3] Hesse, *Der kriegswirtschaftliche Gedanke*, pp. 43–4.

[4] Hesse, *op. cit.*; Korfes, *op. cit.*

[5] Karl W. Förster, *Verkehrswirtschaft und Krieg* (1937); Albrecht Czimatis, *Energiewirtschaft als Grundlage der Kriegswirtschaft* (1936); Charlotte Lorenz, *Die Statistik in der Kriegswirtschaft* (1936); Hermann Pantlen, *Krieg und Finanzen* (1935); Mühlner, *op. cit.*; Wiedenfeld, *op. cit.*; Theo Macht, *Die deutsche Fettwirtschaft in und nach dem Kriege* (1936), all published Hamburg: Hanseatische Verlagsanstalt.

[6] Wiedenfeld, *op. cit.* p. 59.

[7] Hesse, *Kriegführung;* Fritz Fetzer, *Ölpolitik der Großmachte unter kriegswirtschaftlichen Gesichtspunkten: Das japanische Beispiel* (Hamburg: Hanseatische Verlagsanstalt, 1935); Hoch, *op. cit.*

> The building up of economic power for war purposes is therefore spread over a period when the nations are at peace with one another.[6]

Small wonder that an experienced economist, looking back on the pre-war period, gave it as his considered opinion that the economic problems and limitations of conducting a total war had been insufficiently studied in Britain![7]

V

It is difficult to gather information on the authors fathering the German *Wehrwirtschaft* literature. To proclaim national socialist sentiments at the time when they were writing would have constituted an act of advisable self-protection, whatever their convictions. Most of them, it is true, did not appear to wrest this allegiance from very unwilling bosoms. Binz had been a frequent contributor to the *Völkischer Beobachter* and other national socialist publications from as early as 1927, under both his own name and the pen name of *Boyenus*. Pantlen, whose subject was the fiscal side of war and who displayed considerable familiarity with the financing of all major wars waged since the later eighteenth century, fulminated against eternal peace as a state of affairs which would deprive young and ambitious nations of all opportunities to assert themselves *vis-à-vis* old-established powers;

---

[1] Lauterbach, *op. cit.* p. 30; Medlicott, *op. cit.* I, 13.

[2] Hancock and Gowing, *op. cit.* p. 45.

[3] Lauterbach, *op. cit.* p. 187.

[4] R. J. Hammond, *Food* (London: History of the Second World War, United Kingdom Civil Series; H.M.S.O. and Longmans, I, 1951), pp. 10–11 and app. A; Sir Richard Hopkins in introduction to D. N. Chester (ed.), *Lessons of the British War Economy* (Cambridge: Univ. Press, 1951), pp. 3–4.

[5] Hancock and Gowing, *op. cit.* p. 127; Joel Hurstfield, *The Control of Raw Materials* (London: History of the Second World War, United Kingdom Civil Series; H.M.S.O. and Longmans, 1953), pp. 52–3.

[6] Harold Macmillan, *Economic Aspects of Defence* (London: Macmillan, 1939), p. 2.

[7] E. A. G. Robinson, 'The Overall Allocation of Resources', in D. N. Chester (ed.), *op. cit.* pp. 56–7.

> the future belongs only to nations which think heroically, not to those undermined by the epidemic of pacifism.

Förster concluded a study on the contribution of transport and communications to national well-being with a gratuitous allusion to the waves of frantic political enthusiasm which broadcasting could pour into every household, the use of transport to convey party members to national socialist functions, and 'Strength through Joy', while Winschuh devoted the whole last chapter of his book to 'Adolf Hitler as Economist'. Kurt Hesse, editor of the series, embodied the Prussian military tradition employed in the service of national socialist aims. His father, a major-general, had acted as chief of staff to the German ninth army during the 1916–17 campaign in Roumania. Inside information about this campaign thus placed at the son's disposal provided him with material for the inaugural dissertation by which he established himself as a lecturer in Berlin University in 1934, entitled 'Reciprocal relations of operational and economic warfare, illustrated by the development of the German oil administration from summer 1916 to autumn 1917 (opening up of Roumanian sources of oil) in connexion with the campaign against Roumania'. It is not obvious, nor does Hesse supply any indication, for which faculty of the university this dissertation qualified him, but the material stood him in good stead for his book *Kriegführung und Kriegswirtschaft im Feindesland* in 1936.[1]

Hesse, a major in the first world war, but promoted colonel by the outbreak of the second and considered a leading writer on military topics,[2] was typical of the circle of contributors to the development of -fensive science. After reaching commissioned rank in the forces, a number of them subsequently passed into universities, but remained subalterns in the academic environment to which they penetrated late in life. Indeed, not all of them may have been on the academic staff; Major Macht of the Reich Air Ministry commends his treatise to the reader by the cryptic remark that he has been stimulated to authorship 'through being detailed to the university' [3] – not a very usual method of recruiting academic teachers. But only infrequently do the German equivalents of *Who's Who*? furnish supplementation of the scanty information which the authors' modesty permits them to supply about themselves.

Two of them are exceptional. The writer of a treatise on raw material control during the first world war had embarked on his academic career in 1902, being elevated to a chair in 1903 and continuing in academic employment throughout, except for a short spell in the service of the German foreign office.[4] The other exception is the solitary female voice in an otherwise exclusively male choir. Dr Charlotte Lorenz had been a lecturer in government and statistics in the University of Berlin when she contributed a treatise on statistics in the war economy to the series, but by 1937 had achieved professorial status; however, she did not subsequently list this study among her credit titles.[5]

---

[1] Binz, *op. cit.* footnotes *passim* and bibliography; Pantlen, *op. cit.* esp. p. 61; Förster, *op. cit.* pp. 55–6; Winschuh, *op. cit.*; Hesse, *Krieg führung* . . . ., pp. 7, 16, 17.

[2] Lauterbach, *op. cit.* p. 72.

[3] Macht, *op. cit.* p. 6.

[4] Wiedenfeld, *op. cit.* Biographical material from *Wer Ist's*? (10th ed. 1935).

[5] Lorenz, *op. cit.* Biographical material from *Wer ist Wer*? (12th ed. 1955).

Once a state of war existed, the self-denying ordinance which had precluded the use of German current practice in *Wehrwirtschaft* treatises could be abandoned; on the contrary, the German example could now be flaunted as the supreme triumph of a -fensive economy. The series of *Schriften* was not continued into the war, but Josef Winschuh took advantage of the opportunity in his book *Gerüstete Wirtschaft*. Winschuh's antecedents differed from those of the other authors. Though he had studied, and taken a degree in, economics, he had chosen neither an academic nor a service career, but had gone into industry as a textile manufacturer, being at some time a member of the board of the German employers' federation.[1] An economist himself, Winschuh had no high opinion of his fellow students. He pointed out that national socialism, containing within itself the basic elements of a political economy, had devalued the currency of economics by leaving no room for schools of economists; hardly ever had national socialist rulers sought advice from professors of economics. On the contrary, national socialism had gone ahead and introduced new economic methods and ideas, with economic science following breathlessly in its wake trying to interpret what had happened. Indeed, so free from doctrinal fetters was national socialism that it had never produced a consistent system of economics![2]

Unlike his forerunners in this field, Winschuh felt free to describe the growth, not just of a -fensive economy, but of the German -fensive economy of the 1930's. It was completed in three stages, partly consecutive, partly overlapping and simultaneous: creation of full employment, rearmament, and the fully planned and controlled economy of the four-year plan. Freed from the necessity of using the language of camouflage, he put the cards on the table far more frankly than his predecessors. With commendable lack of reserve he explained the German method of reducing the countries of South East Europe to ever greater dependence on the German market. In considering the rôle of the *entrepreneur* in a totalitarian economy on the one, that of the worker on the other hand, he proved himself interested in the sociological as well as the economic aspect of his subject to which he devoted chapters on the mechanics of a totalitarian economy and of mobilization as well as on totalitarian foreign trade. Throughout his book there runs a strong undercurrent of confidence that the last word had been said on the -fensive economy; it could not fail. The disappointment to which he and his fellow writers were doomed may explain why no further work in this field appears to have been done so far.

VI

To determine the degree to which a country is in peacetime economically prepared for the outbreak of war is an exercise in which economists may legitimately indulge. To that extent the -fensive economy can claim to form a branch of descriptive economics. Doubts as to its value arise when it is examined from the point of view of economic theory. The writers developing this aspect of -fensive science [3] come to no conclusions: they define, they classify, they describe how the concept was shaped, but they discover no economic laws, they provide no general principles; contrary to what John Stuart Mill postulated for economics, they throw up the city walls without first building the town itself. They appear to wait for somebody else to breathe life into the *homunculus* they have created, but they wait in vain.

---

[1] Biographical material from *Wer ist Wer*. Winschuh also does not own up to the paternity of his work *Gerüstete Wirtschaft* in that post-war entry.

[2] Winschuh, *op. cit.* p. 184.

[3] Binz, *op. cit.*; Hesse, *Der kriegswirtschaftliche Gedanke;* Korfes, *op. cit.*

This is not surprising. Any pretence to reduce -fensive science to absolute and universally valid laws cannot be sustained. This becomes apparent as soon as attempts are made to quantify the practical task. Every modern State indulges in a -fensive economy to the extent of maintaining armaments. As soon as it becomes necessary for practical purposes to determine the quantity and quality of armaments to be provided, a purely pragmatic appreciation of the country's vulnerability, its existing relationships with other countries, its alliances, is required.

> Come the three corners of the world in arms,
> And we shall shock them!

may have been an adequate theory of -fensive science in King John's days; twentieth-century conditions make it unrealistic. The present-day State holding itself prepared to face all comers at any moment would be ruined by the economic strain entailed in such preparedness. Preparedness in the modern world can only be preparedness for foreseen contingencies: a war conducted against specified enemies with the aid of specified allies over a predictable area according to preconceived plans. Such a war can be scientifically prepared; a country's economy can be adjusted to sustain it, as was Germany's in the 1930's. But two limitations reduce the value of -fensive science from the economist's point of view. The political scene is fluid: as governments of different countries come and go, alliances concluded between them grow closer or more remote; new friendships spring up, old ones are ended. This is well illustrated by British experience between the two world wars, when the navy laid its plans on the basis of one hypothetical enemy, while the army had in mind another, the air force a third; not until 1937 was Italy added to Germany and Japan as a possible aggressor, nor did planners ever decide whether Germany or Japan should be considered the principal menace. If Germany, would she attack Britain alone, France alone or Britain and France simultaneously? [1] The evaluation at all times presupposes a correct forecast of political alignments as they will exist at the outbreak of war; if the position of a single power on the political chessboard has been misinterpreted, the -fensive economy will be unbalanced. In the second place, the discovery of new substitutes for important raw materials, the supersession of manufacturing techniques for war equipment, all change the picture of necessities and opportunities. No -fensive analysis of the political or material kaleidoscope ever remains valid for long; the situation requires fresh evaluation, if not daily, then at least at frequent intervals. Whether such forecasts can ever attain scientific accuracy, may be doubted, but in no case would they form part of economic science. Hence the -fensive economy, if not a weed, is at least no more than a broken reed in the economic garden.

The London School of Economics and Political Science

---

[1] Hancock and Gowing, *op. cit.* pp. 63–5.

REVIEWS

GREAT BRITAIN

H. L. Gray. *English Field Systems.* (Harvard University Press. London: The Merlin Press. 1959. Pp. x + 568. 63*s.*)

This is a reproduction by an unspecified process of the book published in 1915. Its crucial rôle in agrarian history needs no emphasis here, and indeed re-reading the book makes one aware how far Gray took the subject and what a wide range of documents and maps he had managed to see in the days before county record offices and conveyor-belt research students. They were also the days before this *Review*, but it is too late to attempt a first review in this short space. A review would need to relate this book to the corrections and supplementary work of a generation and a half, and it would be unfair to treat 1915 critically in terms of 1960. But it is good that the book is here again after a long exile, out of print at collectors' prices in second-hand catalogues, and it will be a long time before students can afford to ignore the massive collection of evidence here. It is easy to smile at the 'Boundary of the Two- and Three-Field System' which passes between two Oxfordshire villages on Gray's map but it was sensible to publish the book, warts and all. To have brought it up to date would have needed not an introductory essay but a multi-volume *Agrarian History*. But what has been saved by not paying an Introducer might have been spent on the book's appearance. The cover is unlikely to remain attached to the sewn pages in heavy library wear. The letters on the spine are poorly tooled and it is difficult to see if the author is Cray or Gray. The title of the book is also wrongly given on the spine and on the dust jacket, but not on the title page.

University of Leeds M. W. Beresford

C. D. Ross (Ed.). *Cartulary of St. Mark's Hospital, Bristol* (Bristol Record Society Pubns. xxi: Bristol. 1959. Pp. xliv + 326. 1 map. Non-members £2. 2*s.*)

Dr Ross has calendared the 450 documents or thereabouts contained in this late fifteenth-century register and printed the texts of some important and interesting deeds in an appendix. Apart from foundation charters and documents concerning the constitution and patronage of the house, the charters refer to its property in Bristol and neighbourhood, Earthcott and Iron Acton (Gloucestershire), Stockland Bristol, Weare, Brewham and Over Stowey (Somerset) and Winterbourne Gunner (Wiltshire). They have been calendared so well that the reader is seldom moved to speculate about the Latin which lies behind the English text; further, in an introduction, Dr Ross discusses the foundation and constitution of the hospital, its lawsuits and their cost, the growth of its estates and certain aspects of the history of medieval Bristol (the extension of the suburbs, immigration into the city and the borough courts). An appendix also adds to and corrects the accepted list of early mayors and bailiffs. Economic historians will be grateful both for the introduction and for the primary material provided by the cartulary (and incidentally, having seen what St.

Mark's can offer, they will regret with Dr Ross that similar material in the register of St. Augustine's remains 'immured in Berkeley castle'). For apart from the matters mentioned above and the picture of medieval charity which emerges from the cartulary, it sheds much light on a variety of questions. We learn that bread could be made of wheat, barley, rye or beans, and that pottage might be confected of oatmeal or beans. In Bristol, we note a concern for the amenities of St. Augustine's Green, information about the city custom regarding the testamentary devise of real property and indications that messuages might have considerable spaciousness. Elsewhere we catch a glimpse of a *ville neuve* at Weare, with its craftsmen who witness charters and customs analagous to those of Bristol. In the countryside, the charters show assarting in progress in the thirteenth century, the sort of livestock a small man might have, the Hospital procuring a marl pit and that ewes might be milked as well as cows. An interesting charter records what seems to be a very beneficial lease of Winterbourne Gunner to the Lord Edward in 1265, with its list of those things which might 'diminish' a property – dower, scutages, tallages, usury and 'the misfortunes of war caused by the oppression of the kings and magnates of the land in future times'. This is an authentic echo from the England of the Barons' Wars and Henry de la Mare, the lessor, seems to have been deeply involved in the troubles of the time. He turned bandit and was killed trying to escape from captivity. The Lord Edward's lease of Winterbourne was turned into full ownership and he conferred the manor on St. Mark's. In the opinion of that house, as it emerges by implication in the cartulary, this may be accounted a story with a happy ending.

St. John's College, Cambridge EDWARD MILLER

MAY McKISACK. *The Fourteenth Century 1307–1399*. Oxford History of England, Vol. V. (Oxford: at the Clarendon Press. 1959. Pp. xix + 598. 35*s*.)

To compress the rich and varied life of fourteenth-century England within the limits of a single volume is no easy task, and it is harder still to interpret the many conflicts it has aroused among modern scholars without incurring specialist disapproval. Professor McKisack has emerged with great credit from this exacting assignment. The strength of her book lies in its chapters of political history. Miss McKisack displays a talent for clear, vigorous and economical narrative, informed by a wide acquaintance with original sources which enables her to add to our knowledge on many points of detail. She also challenges accepted interpretations of the fourteenth century on some broader issues. For many readers, the chief novelty will lie in the greatly diminished emphasis on administrative history: the king's household now looms less large than in most recent work. Miss McKisack is also sensibly sceptical about the constitutionalist overtones with which some modern writers have invested contemporary crises and ordinances (e.g. the Statute of York, p. 72). Politics centre round personalities, and such principles as appear are very much those of the fourteenth century.

But the most original feature of Miss McKisack's interpretation is her spirited defence of Edward III. She is a harsh critic of Edward II, and regards the deposition of Richard II as that of a dangerous tyrant, although she successfully motivates him without undue recourse to modern theories of abnormal psychology. In contrast, Edward III is presented as a popular and successful king, a great leader of men and a superb soldier (pp. 148–50) and no mean politician in his domestic government. It is true that Edward has often been underrated, but Miss McKisack's admiration for him seems exaggerated. Was he, for example, really the consistent strategist she claims? Much of his success came from the opportunism of good fortune and was not allied to any clear plan of conquest. We also need much fuller evidence before we can accept the claim that Edward's victories were made possible 'by careful planning and rigorous training at home, directed by a man who must have been able to take long views' (p. 149): the discipline of the English soldier in France may have a simpler explanation in the experience won in the Scottish wars and in the natural influences of a society accustomed to military pursuits. Miss McKisack rightly emphasizes Edward's ability to win the support of his barons, and his so-called 'appanage policy', as she points out, was eminently successful in his own lifetime. But her belief that the growth of the concept of peerage tended to minimize the importance of particular classes within the baronage (p. 186) surely ignores a development she notes elsewhere – the emergence, only partly encouraged by the crown, of a small group of very great magnates, who were increasingly conscious of their dignity and had little in common with lesser lords.

Away from war and politics, Miss McKisack is more conventional. Her survey of the church follows the recent tendency towards a reappraisal of the fourteenth-century hierarchy, but the religious orders are treated too summarily to suggest their true place in contemporary society. The two chapters which Miss McKisack devotes to economic affairs are perhaps the least satisfying in the book, although useful as a general survey and in bringing together a wide variety of articles and monographs. In her discussion of 'Rural Society', Miss McKisack is professedly cautious in her approach to a subject where recent research has tended to stress 'disparity rather than analogy', but this does not prevent her from drawing a distinctly rosy picture of fourteenth-century economic life. She is right to emphasize the humanizing effect of the Christian framework of agrarian life (a point too often ignored), yet it is hard to believe that the peasantry were in general so comfortable as she implies: little is said about the rise in prices or about the effects of taxation, particularly the oppressive poll-taxes. That England in Richard II's time was generally in 'a state of high prosperity' (p. 347) may be true, but this 'overwhelming impression' is not substantiated by the evidence cited in this volume. Miss McKisack's views are here in marked contrast with those of Professor Postan and others who have recently found solid evidence of depression, which Miss McKisack seems too ready to discount. She is also unduly optimistic about the economic consequences of the war with France (p. 150): it may have had adverse effects other than the damage to the wine trade, although we know little as yet about the incidence of war taxation and the disruption caused by impressment of shipping and purveyance. The analysis of the agrarian situation in the thirteen-forties (p. 329) is cryptic and rather confusing and deserves fuller treatment than it has received here. This was a period of rising rents only in the sense that cash payments formed an increasingly large part of income from land: it is more doubtful whether rent rose from a tenement already leased, as Miss McKisack seems to imply, and her example of 'the rising scale of rents' at p. 330 means little, for it merely compares demesne rents on different manors at different dates. Yet it would be unreasonable to expect Miss McKisack to satisfy everyone on topics still so controversial, where (as she remarks) 'generalization becomes increasingly hazardous'. We have every reason to be grateful to her for a work distinguished by its care, learning and good sense, which will take its place as one of the more important volumes in the Oxford History of England.

University of Bristol C. D. Ross

Dom David Knowles. *The Religious Orders in England.* Vol. III. *The Tudor Age.* (Cambridge: at The University Press. 1959. Pp. XIV + 522. 55*s*.)

The concluding volume of Professor Knowles's history of the communities of regular clergy and nuns in medieval England comes as something of a bonus. What might well have been merely an appendix to the volume dealing with the later middle ages has been expanded into a large book, one that can stand by itself as a contribution to Tudor history. Professor Knowles has been moved to venture into this later period, no doubt, by the failure of Tudor specialists to produce a balanced and coherent account of this aspect of the Reformation. His approach, looking forward from the medieval centuries, has indeed lent the book a perspective hitherto lacking in studies of the subject, national or local. In one respect his task must have been easier than in the case of his earlier volumes, in that there is a story to be told. And the story has never been told better. Chapter by chapter, with hardly a hint of what lies ahead, the facts are set out, first Wolsey's suppressions, then Cromwell's successive – and hitherto very confused – visitations and commissions, followed by the actual surrenders and attainders in their proper sequence, concluding with a brief account of the Marian and later revivals. Interspersed are chapters dealing with particular topics, episodes and monastic personalities.

For economic historians the interest of the volume must lie in what Professor Knowles can tell them of the economy of a large Tudor household, of the sources and fluctuations in monastic income, of monastic agricultural policy and of the value of monastic land as an investment for the layman. It is in the economic field that the author admits most often to the lack of sufficient evidence and appeals for further detailed research. Professor Knowles finds the early Tudor period 'an earthy, selfish, grasping age', and he spares neither the religious themselves nor the lay society which engulfed them. He writes, however, with a felicity and with a charity which is refreshing by comparison with the cynical, unsympathetic or sensational approach which has characterized so much that has been written on this subject. He has leaned heavily for his material on such work as has been published, much of it scattered in local journals, and in most respects he is content to let the facts speak for themselves, his own comments being most restrained. On a number of points, however, he writes with great conviction. For instance he attacks most vigorously the widespread notion that the religious houses in general at this period were in serious debt. He contends that many of them showed a substantial profit on the year's working and that most houses could from time to time quite easily tighten up their finances and find supplies of ready money. As evidence of this he refers to the carrying through of so many ambitious building schemes during the later decades. Are we sure, however, whether these were made possible by saving out of normal revenue or by cash accumulated by capitalizing future income? It is a point one would like to see pursued by reference to more of the surviving account rolls. In general Professor Knowles has little to contribute to our knowledge of monastic income, confining himself to an evaluation of the

Valor Ecclesiasticus, which at best provides a very static picture of monastic resources. Much was to happen in the case of the larger houses between 1535 and 1539. Long leases were profusely granted, many at reduced rents; and these, together with a shower of fees and annuities to laymen have to be sought in the records of the court of Augmentations where they were brought for confirmation and payment.

Professor Knowles embarks, with considerable courage, on what might almost be termed an 'O. and M.' investigation into monastic expenditure. For example, with regard to lay servants he has gathered some useful statistics, limited in their derivation but at least proving that the number of laymen employed in the day-to-day service of the smaller houses was not disproportionate to the numbers of monks and nuns. Even so Professor Knowles feels that they could have managed with rather fewer. The chief source of extravagance he feels to have been the separate households of the abbots and priors. That Prior More of Worcester could appropriate a quarter of the total income of his house and thus be enabled 'to equip with all domestic furnishings and amenities three or four large manor houses', he finds economically indefensible. Morally and spiritually, of course, this was certainly the case, this not being the purpose for which the revenues had been intended. But regarded purely in terms of a wider local economy, this expenditure, assuming that it used up surplus money not needed for the monastic household proper nor for the fabric, was probably not a bad thing. It was better that the money should go to the maidens of Grimley who received 1/4d for singing on May Day, and to the tradesmen and labourers of Worcester, than that it should be spent in London by some absentee landlord. The inquiry concludes with some rather puzzling and inconclusive remarks on wastage of food. Professor Knowles thinks that this was no more excessive than in any modern institution where such waste is at least mitigated by the existence of 'commercial organisations (which) exist in all large centres of population to dispose of surplus and spoiled products at a lower level of subsistence'. Is he implying that the organized collection of pig-swill – for what else is this? – is something peculiar to the Welfare State?

The change-over, beginning in the middle of the fourteenth century, from monastic 'high farming' to a system of rents would appear to leave little more to interest the historian of agriculture in monastic affairs. Professor Knowles draws attention more than once to the considerable flocks kept by some houses during this period and remarks that they must have been producing surplus products for the market. This he seems to regard as a survival from the past. He does not pursue the subject further, although there is considerable evidence that from about 1500 the monks were hardly less appreciative than their lay neighbours of the enhanced value of land to the occupier. Osney Abbey, for example, early in the reign of Henry VIII, was steadily raising rents, reoccupying demesne formerly leased, purchasing (and selling) young stock and selling quantities of skins, hides and wool. Enclosing abbots too were not unknown. Even the practise of farming out spiritual revenues, to which Professor Knowles refers, reflects a realistic outlook, for it is noticeable that tithes, whose value in hand would keep in step with rising prices, were usually let for short terms. What still remains to be worked out in detail is how far the energy which was certainly being shown on some monastic estates was due to the administrations of laymen, and at what point, before or after the Dissolution, the economic initiative passed to them.

Professor Knowles's vivid account of the actual process of surrender and of the arrangements made for the disposal of movables and fabric suggests many lines of inquiry. For example, did the sales of lead, stock, etc. appreciably affect local prices? In dealing with the terms on which the monastic estates were sold, Professor Knowles has perhaps been a little premature in his generalizations. For instance, he quotes a figure of $2^1/_2$ per cent as the proportion of the estate given away – he does not say during what period of time. But for at least one county the proportion given away during the last decade of Henry VIII's reign was about 16 per cent. In other respects he is on firmer ground, for instance in his appreciation of the fact that some time had to elapse before many a grantee was able to enjoy the real value of the lands he had bought. But he does not make it sufficiently clear that, at least during Henry VIII's reign, the purchase price was calculated strictly on a current valuation. Moreover the pensions and fees with which a few of the grants were charged, being terminable and duly allowed before the price was arrived at, were hardly to be regarded as 'burdens'. As for the speed with which the lands were disposed of by the Crown, Professor Knowles apparently contradicts himself, stating on p. 398 that the Crown 'for long reserved radical ownership of more than half the estates concerned', and later, on p. 401, that by the end of Henry VIII's reign the regular revenue which the Crown might have enjoyed was 'less than half the original monastic income'. These two statements can only be reconciled if it can be proved that considerable parts of the estate were granted to individuals for their lives, with no rent reserved. Such grants do occur, but there are not many of them. Professor Knowles, quoting Gasquet, is very severe on the court of Augmentations. Admittedly it was an unpopular department with contemporaries but this was precisely because of its bureaucratic efficiency, which inevitably caused delays. As for graft, the evidence so far collected suggests that, although the names of its officers loom large in the list of grantees, they paid for what they received at current prices. And is it true that Cromwell and the king arranged gifts and other deals without reference to the Augmentations? This was not the experience of Lord Lisle, nor is it borne out by the Augmentations Office records.

In the chapter on the disposal of the monastic estates, two slips have been noted. In the first place Professor Knowles states that the reservation of a rent of one tenth applied only to grants worth over one hundred marks. There is no such limit provided for in the relevant statute (27 Henry VIII, c. 27) nor is it reflected in the particulars for grants. Secondly he states that the reservation of a tenure by knight service applied only to properties worth over £2. This concession was introduced, but not until 1544. Moreover in 1548 the limit was raised to £4 and in 1556 to £10. Finally issue must be joined with Professor Knowles on the subject of what used to be regarded as the large army of 'speculators', men who bought and are recorded as having resold almost at once. Following a recent article by Professor Habakkuk, Professor Knowles points out that most of these were merely 'agents', making little or no profit. This is indeed true of the majority of those who bought and sold the larger estates, but there still remain a considerable number of dealers who, singly or in syndicates, bought up large collections of smaller units, often urban tenements, and resold fairly quickly, at considerable profit, more often than not to the tenants in possession.

But these minor points do little to detract from the value of this work which will be apparent to specialist and general reader alike. The story of the Dissolution and of the years immediately before will not need to be retold for a very long time. Meanwhile, for the vast amount of detailed inquiry which is suggested on nearly every page of this large book, not least in the economic field, Professor Knowles's work will serve as an inspiration and a firm foundation, not least of all for the excellent and very comprehensive bibliography.

University of Exeter JOYCE YOUINGS

S. G. E. LYTHE. *The Economy of Scotland in its European setting 1550–1625.* (Edinburgh and London: Oliver and Boyd. 1960. Pp. viii + 277. 21*s.*)

The author of this interesting book states that the 'primary intention has been to discover how far the great Europe-wide economic tendencies were reflected in Scotland's domestic life and external relationships'. The treatment is not confined within 'any narrow definition of economic history', and embraces political and social factors.

The first part of the book deals with Scotland's domestic economy. No important aspect is omitted, and few unimportant. Each is clearly and concisely described, and there is an abundant citation of authorities. The conclusions that in about the third quarter of the sixteenth century the medieval industrial organization achieved its maturity, that harvest failure and chaotic currency management destroyed confidence in the 1580's and 1590's, and that in the early seventeenth century revival was such that 'Charles I succeeded to a Scotland whose economic life was entering a vigorous and expansive phase', are adequately related to political development. The second part of the book describes Scotland's external trade. Each main area is treated separately, and the author succeeds in giving accounts which are lucid without being misleadingly oversimplified. Perhaps most interesting is the chapter on economic relations with England. Here the evidence of the Port Books is well used to illustrate the complexity of the relationship.

The main conclusion is that in this period Scotland began 'a slow and hesitant but none the less significant emergence' from her economic backwardness. The importance in this process of the Reformation with the consequent change in relations with England is stressed. 'The withdrawal of the old threat of English hostility provided the basic requirement for economic and social improvement .... the major contribution of the Anglo-Scottish *rapprochement* was the opportunity it provided for the King to assert the authority of the Crown among the Scottish people.'

The reader of this book may be disappointed if he builds too high hopes upon the author's declared intention. The material is provided, and clearly provided, though there is comparatively little discussion of the relative reliability of the many sources used. The reader is left – reasonably enough, no doubt – to discover elsewhere 'the great Europe-wide economic tendencies'. He is on the whole also left – perhaps less reasonably – to establish for himself the relationship of these tendencies to the Scottish story so carefully and expertly told. The author seems unduly diffident in sharing any discoveries which he may have made. Certainly more space is devoted to generalities on Scottish political development which are neither particularly novel nor particularly recondite. The book has, nevertheless, very considerable merit. The student will find an extremely useful summary, based upon sound scholarship, of most aspects of Scottish economic development and sign-posts to a detailed examination of particular topics. In these respects the book is a valuable addition to the literature of this period and meets a felt want.

Exeter College, Oxford W. G. BARR

N. J. Williams (Ed.). *Tradesmen in early Stuart Wiltshire.* (Wiltshire Arch. & Nat. Hist. Soc., Records Branch, vol. XV. Devizes. 1960. Pp. xxii + 145.)

Dr Williams has printed abstracts in English of entries relating to Wiltshire in four Exchequer records and has provided a valuable introduction discussing the circumstances in which the returns were made and including figures for beds and stabling in Wiltshire inns, taken from a survey made in 1686. The first section gives fines imposed by the royal clerk of the market during James I's visit to Wiltshire in 1607. The second is a list of recognisances to sell no meat in Lent taken from innkeepers and victuallers in 1620. The third gives the informations lodged in the Exchequer during the whole reign against persons who broke the laws; while the last is a list of licensed retailers of tobacco in 1637, which illustrates the extent to which the use of tobacco had become a habit among all classes by this time. As Dr Williams points out, 72 tradesmen paid a total of £302 for annual licenses, besides which there was a considerable illicit sale.

The second list shows that Lenten recognisances were taken from 611 persons of whom the majority were innkeepers, alehouse keepers and tipplers. A casual survey suggests that there was not a superabundance of such people in the county and that their distribution was uneven. Many small places had none. Probably not all keepers of licensed premises sold food; but it seems odd that Chapmanslade had four while such places as Shrewton, Tilshead, Seend, Keevil and Stockton, – a random selection which could be expanded into a long list – had none at all. A partial survey discloses several persons, both butchers and alehouse keepers, who acted as sureties but who, if the index is correct, never entered into recognisances themselves; and it seems possible that the list is not so inclusive as it appears at first sight.

The third section gives a vivid picture of the activities of public informers which led to their being denounced by the Wiltshire Justices in 1619 and to the closing of the central courts to most classes of information in 1624. The offences with which they most commonly dealt range from engrossing foodstuffs, buying wool and yarn for resale and selling wine without license, to taking usury and carrying on a trade without having been apprenticed to it. The editor explains the comparatively rare appearance of clothiers by suggesting that, since the fines were light, they commonly compounded with the informers. Besides a crop of aulnage offences in 1612, a few appear in 1607 as holding more than twenty acres of land and there are a few cases of practising the trade outside a corporate town. Since neither of the statutes concerned appears to have had any effect, this may give some measure of the amount of compounding which went on. The informations rose from a modest two in 1603 to a maximum of 109 in 1612. This total was swollen by the aulnage offences mentioned above, but, even without them, it remained at 86 and 80 respectively for the next two years and rose again to 105 in 1615. Then it dropped to 30 in 1616, 32 in 1617 and 28 in 1618. Did compounding increase or did something else happen to advise caution or to make the informers' trade less profitable, even before the Justices' protest?

Melksham, Wiltshire J. de L. Mann

Neil J. Smelser. *Social Change in the Industrial Revolution. An Application of Theory to the Lancashire Cotton Industry, 1770–1840.* (Routledge and Kegan Paul. 1959. Pp. xii + 440. 40*s.*)

In recent years, economic theorists have made an increasingly significant contribution to the study of economic history. Sociologists have shown less inclination to prospect neighbouring territory and for this, if for no other reason, Dr Smelser's incursion into economic and social history deserves a warm welcome.

Dr Smelser's field of investigation is the Lancashire cotton industry in the age of the classical Industrial Revolution. That this is well-trodden ground is to his purpose, for the study is interpretative rather than descriptive. In an earlier work, with Dr Talcott Parsons (*Economy and Society*), Dr Smelser advanced the thesis that the development of forms of economic and social organization is explicable in terms of a single common theory. *Social Change in the Industrial Revolution* is an attempt to apply such a general theory of social development to a particular industrial case.

Dr Smelser's book divides itself into three parts. The first, wholly theoretical, establishes a general model of economic and social development. The growth of an economy, as of a society, it is argued, takes place by a process of differentiation and diversification, which, like the life of Shakespeare's man, works itself out in seven stages. These may be briefly summarized as: (1) dissatisfaction with the existing order; (2) the appearance of symptoms of disturbance; (3) the handling and channelling (i.e. the containing) of these discontents; (4) the emergence of new ideas; (5) their specification; and finally their adoption (6) first by pioneers, and (7) then by the generality.

Within this framework Dr Smelser proceeds to describe and to analyse the growth of the Lancashire cotton industry in the era of the great inventions. Thus, in spinning, market pressures, exposing the failings of the domestic system, are seen to set in train developments which lead to the establishment and acceptance of the factory system. In a general sense this argument is, of course, unexceptionable to the point of being platitudinous. No one would wish to question the significance of structural differentiation as a central feature of the development of economic organization in general and of industrial organization in particular; so that if a model as elaborate as Dr Smelser's is to justify itself it must do so in detailed as much as in general analysis. In the case of cotton-spinning Dr Smelser is in fact hard put to it to demonstrate the existence of stage 2 ('symptoms of disturbance') and is compelled to telescope stages 3 and 4. The economic historian, who has travelled through some 150 closely argued pages with Dr Smelser, may at this point feel some excusable frustration. Dr Smelser's exercises in the study of economic growth may teach the historian something of the methodology of the sociologist, and the sociologist something of the problems of the historian, but it is doubtful if they contribute much to the extension of the general bounds of human knowledge and understanding. (Nor does the author endear himself by such statements as: 'During the 1790's certain disruptive tensions were handled, weighed, postponed, and finally dismissed within the rubric of parliamentary methods in the Commercial Society of Manchester').

But in its third and longest phase Dr Smelser's book offers ample recompense. In dealing with social as distinct from economic phenomena the sociologist comes into his own. It is significant that in this section of his work the author is less preoccupied with his model; but though the theoretical framework is less obtrusive it gives coherence and strength to Dr Smelser's account of social change. The family is, for Dr Smelser, the focal economic and social unit in pre-factory society, and his study seeks to show the impact of technological and economic change on family structure and attitudes of mind. The novelty of this approach lies not in its essence but in the thoroughness of Dr Smelser's analysis. He produces abundant and convincing evidence to support the view that the unrest of the early years of the nineteenth century is by no means wholly to be explained in terms of the movement of real wages and of unemployment percentages.

Sometimes, with the pardonable zeal of the pioneer, Dr Smelser seems to press his thesis too hard, preferring the answer which is subtle and obscure to the one which is simple and obvious. Why, he asks, were men and women of low earning-power and with large family responsibilities the least inclined to favour a shortened working week? Not because their real incomes were the lowest, but because 'they were squeezed . . . . by the cross-purposes of industrial and family differentiation'. Why, again, did agitation for factory reform increase rather than diminish as a result of the passing of the 1833 Act? Not primarily, Dr Smelser argues, because the worker was encouraged to seek wider concessions, but because the act 'increased the differentiation of the labour roles in the family economy'.

But even at his most perverse, Dr Smelser never fails to stimulate. Sometimes irritating in argument, more frequently so in expression, his book nevertheless is an important contribution both to economic history and to social studies in general. Whether Dr Smelser has established the validity and utility of his central thesis is a matter of opinion, but there can be no doubt of the value of his study to the economic historian: and his careful combing of the Blue books has produced a harvest which any historian might properly envy.

University College, London ARTHUR J. TAYLOR

ASA BRIGGS (Ed.). *Chartist Studies.* (London: Macmillan and Co. 1959. Pp. xii + 423. 42*s*.)

After more than a century, Chartism still has a powerful attraction for social historians who dislike the capitalist system. Viewed narrowly and unsympathetically, the struggle for the People's Charter may seem to have been a pathetic fiasco, or merely a prominent episode in the centuries-long movement for the radical reform of Parliament. Historians whose main interest is in social stratification, however, see the Charter as symbolising the revulsion of the working classes against all the social and economic inequalities of the nineteenth century. The chronology of Chartism as a national movement with a central organization was established firmly by Hovell (and Tout) more than forty years ago. Since that time books on various aspects of the subject have made it clear that the main strength of the movement lay not at its ramshackle centre but in the local and regional organizations which used the People's Charter as the focus for a very varied assortment of aims.

Professor Briggs sees that 'a study of Chartism must begin with a proper appreciation of regional and local diversity'. In this book he has brought together studies dealing with Chartism in Manchester (by Donald Read), Leeds and Leicester (by J. F. C. Harrison), Suffolk (by Hugh Fearn), Somerset and Wiltshire (by R. B. Pugh), Wales (by David Williams), and Glasgow (by

Alex Wilson). The basis of selection is not explained; the sample would have seemed more representative if it had included London and Birmingham, Newcastle and Nottingham, and some of the midland counties; no doubt the book will stimulate other historians to fill these gaps. There is no danger that studies of different places will all tell the same monotonous tale. The middle-class Chartism of Leeds was quite different in character from the 'proletarian' Chartism of Bradford; Glasgow, Manchester and Birmingham showed their special characteristics in Chartism as in the other social movements of the period. The local and regional diversity is so great, indeed, that some chapters of the book may defeat readers who are not well versed in the general history of the movement.

Although the national background does not show up very clearly in the local studies, some general conclusions may be tentatively drawn from them. Except in one or two chapters, there does not seem to be much support for the assertion of Engels that 'in Chartism it is the whole working class which arises against the bourgeoisie'. (What should they know of England, who only Engels know?) In the local movements, as in the national organization, many of the leaders were middle-class men – lawyers, journalists, parsons, cloth manufacturers, wool staplers, innkeepers, 'gentlemen', tailors and drapers, with an occasional coachbuilder, auctioneer, and wine merchant. The local leaders had curiously mixed aims, not only at the beginning but throughout the course of the movement. They often found it hard to rouse the working men to any great enthusiasm for either the People's Charter or any other programme of reform. This tendency to apathy became more noticeable after 1842, but among the agricultural workers it was general throughout the period and throughout the country.

Professor Briggs has done his best to give unity to the local studies by enclosing them in two general chapters, on the local background of Chartism and on national bearings; the book concludes with three general studies, on the Chartist Land Plan (by Joy MacAskill), on the Charter and the Anti-Corn Law League (by Lucy Brown), and on the Government and the Chartists (by F. C. Mather). Mrs MacAskill seems anxious to write as an enthusiastic O'Connorite, but this attitude cannot persist after the insanity of the man has developed. She makes some curious statements in attempting to reconcile the varying aspects of O'Connor's character; nevertheless, her detailed study of the National Land Company will bring new light to many students for whom there has hitherto been a gap in the history of Chartism between 1842 and 1848. The chapters by Miss Brown and Mr Mather are among the best in the book: well-balanced, well-informed, interesting and scholarly. Mr Mather is particularly informative on the reluctance of the Whig Government to take any repressive measures against either the New Poor Law agitators or the Chartists; he is also sanely balanced in his criticism of the passivity shown by local magistrates towards the Plug Plot rioters in 1842.

Considered as a whole (though this is not altogether easy to do) the book makes a substantial and important contribution to the history of Chartism; it also opens up a vast field of further research. In the next generation works on Chartist history may well tend to be less biographical and more topographical, though it is to be hoped that this new trend will not prevent some competent historian from writing the definitive biography of Feargus O'Connor. If some of Professor Briggs's collaborators go out of their way to emphasize the severity of the 'class struggle' between the industrial employers and the wage earners, this may result from a reasonable decision to tell the story from the Chartist point of view, without any nonsense about objectivity or impartiality. Anybody who dislikes this way of writing history has the remedy in his own hands. A comprehensive history of British labour movements, written from the employers' point of view, might be illuminating; would Macmillans publish it?

University of Manchester ARTHUR REDFORD

R. K. WEBB. *Harriet Martineau. A Radical Victorian.* (London: Heinemann. 1960. Pp. xiii + 385. 35*s*. 0*d*.)

This new Life and Work is the most scholarly of all the writings on Harriet Martineau, and Professor Webb provides us with most of the materials that we need for an assessment of this highly competent and interesting woman. It is not, as was Mrs Wheatley's volume a few years ago, an essay in hagiography, and he brings out very well the contradictions in Miss Martineau's thinking, the rapid changes in judgement she sometimes made, and her ability to combine good sound common sense with what he rightly describes as 'just plain silliness'. He devotes more space to her earlier life than to the eighteen fifties and sixties, and one could have wished for a better balance in this respect. From among the many aspects of Harriet Martineau's life and intellectual development that are more fully documented and analysed here than in previous biographies may be noted the excellent account of the Norwich *milieu* from which she came, the detailed descriptions of her American travels, the social context of her acceptance of mesmerism, and the impact on her generation of her rejection of Christian belief. The generous use of quotations is most helpful.

Professor Webb illustrates admirably Harriet Martineau's lack of stuffiness compared with many of her fellow Radicals of the early Victorian period, but his assessment of the quality of her radicalism is uncertain. He notes that to estimate her work and influence involves an attempt to define Victorian radicalism, and it is in just this matter that he falters. For all her singularity, and when her personal quirks are put aside, Harriet Martineau was an ordinary run of the mill middle class Radical of the post 1832 generation. She was a superb popularizer of *laissez faire* dogmas; a firm supporter of the New Poor Law; an opponent of the ten hour Bill; an admirer of Edwin Chadwick; a fervent advocate of education as the chief remedy of working class discontent and poverty (and an equally fervent supporter of the Revised Code of 1861); an opponent of trade unions in anything but their friendly society rôle which she thought in any case incompatible with their trade function; a bitter critic of the Builders' strike of 1859–60; an unyielding slave abolitionist. Professor Webb himself comments that 'Her manufacturer's radicalism remained very nearly pure' (p. 348) and this catalogue settles her place well enough in the political spectrum. It is, then, difficult to understand why Professor Webb can write of Harriet that, 'Not for nothing is one reminded from time to time in reading her of Karl Marx. Not in programme, to be sure, but in spirit. Hers was a clean manifestation of the radical temper' (p. 90). To blur the distinction between Victorian middle class radicalism and revolutionary socialism is to make little sense of either the movement of ideas or the changes in practice. Moreover, middle class radicalism itself was by no means a homogeneous body of opinion. In a short discussion which might well have been extended, Professor Webb at the end of his volume remarks on the changing content of radicalism after the mid century; and men like Beesly were to draw very different conclusions from their acceptance of Positivism than Harriet herself. But the problem of definition is much more complicated than this, and a fuller analysis must account for the differences between Bright and Cobden, T.S. Duncombe and the Earl of Durham, the *Economist* and the *Saturday Review*, the Mill of the thirties and the Mill of the Governor Eyre campaign – to mention only some of the more obvious shades of opinion.

But with this important qualification concerning the nature of radicalism, Professor Webb has written a most instructive contribution to the intellectual history of Victorian England. The reader would be further assisted by a more helpful index, and the publishers would be advised to take more trouble with their proof reading. The mess in the middle of the second paragraph on page 53 would not be excusable even if it was an isolated example, which it is not.

University of Hull JOHN SAVILLE

CHARLOTTE ERICKSON. *British Industrialists. Steel and Hosiery 1850–1950.* (The National Institute of Economic and Social Research. Economic and Social Studies. XVIII. Cambridge: at the University Press. 1959. Pp. xxi + 276. 40*s*.)

Study of those who made or make industrial decisions usually suffers from being confined to individuals, often to the more conspicuous successes or failures. By examining as far as possible the social background and careers of all in her chosen fields of steel and hosiery, Miss Erickson provides a unique investigation for the historian of British industry. Her approach has the advantage over studies of individuals in making it possible to discuss such topics as recruitment to management, the source of initiative for the early development of the industries, and, by tracing the education and technical knowledge of the industrialists, the part played by the exploitation of technical ability in the growth of British industry.

Perhaps the attraction of the man of humble origin as a leader, especially in such a large-scale industry as steel, had led to some distorted judgements on these matters. Certainly in steel, as Miss Erickson shows, even in its period of rapid development, indeed until 1914, the leading offices were virtually the exclusive preserve of the upper-middle class. Only since the 1930's has there been a marked change. Steel, especially until the public company dispensed to some extent with the vital requirement of personal capital resources, was not an industry which offered openings to many of limited social and financial attainment. Hosiery in some measure provides a contrast. Neither the education, the marriages nor the fortunes of its leaders were as high in the social scale as in steel, and, of course, the financial requirements for entry were less. It therefore offered more opportunities for progress to those of humble birth. In periods of stagnation the hereditary leadership increased in importance; with the opportunities of expansion came the entry of the new and more humble manufacturers, though, a reflection of the inbred nature of the industry, generally from within its own ranks.

Current ideas on management might quickly condemn this closed system of recruitment as being restrictive of progress, especially since in neither industry were the industrialists taking full advantage of the technical knowledge which was even then available. Since both industries experienced radical innovations in the period being studied Miss Erickson tests such ideas in detail. Clearly the technologist was not responsible for the change. The founders of the early steel-making firms were rarely technical men, while hosiery had virtually no professionally trained people in leading positions. That development came in such industries does not necessarily imply that the closed system of recruitment was ideal. Though in both innovation was chiefly in the hands of the existing firms, these were generally the more youthful though with adequate resources to finance their activities. Innovation in fact had generally a commercial man behind it. That is perhaps one of Miss Erickson's most important conclusions.

In spite of all the interest of the study it leaves one doubt. Miss Erickson's work can be regarded as a pioneering survey, because, ideally, to permit adequate judgement on managerial problems in British industry over the last century the study should be extended to cover the whole of British industry. Would this be worth while? Before answering, it is vital to consider the sources that are available. The difference between steel and hosiery is significant. For hosiery, concentrated around Nottingham, it was possible to exploit genealogical sources. The more extensive nature of steel manufacture posed a more difficult problem, and, on her own admission, Miss Erickson was thrown back on a variety of sources, which cannot always bear the weight laid on them. The admitted neglect of Scotland is regrettable, not simply because of the injured national sentiment that might result, but because such neglect leaves a considerable gap in any study of British steel-makers. This is symptomatic of the problem Miss Erickson had to face. At the mercy of her sources, she was forced in steel to rely on 'national' not on detailed local sources. It may be, however, that if 'few of the finer tools of the genealogist' can be employed, then the value of the work will be greatly weakened. Certainly some of the statements on the steel-makers are not completely accurate. Admittedly the errors and discrepancies are slight, but they sometimes lead to conclusions based on only marginal statistical changes and then, of course, a marginal error in the sources is important. This criticism is no reflection on Miss Erickson who in performing a prodigious task with great skill has produced much of absorbing interest. The doubt that remains is whether or not the type of study she has conducted can really be satisfactorily carried out at all except with a vast research effort, which might soon yield a diminishing return.

University of Glasgow R. H. CAMPBELL

MARTIN HARRISON. *Trade Unions and the Labour Party since 1945*. (London: George Allen & Unwin. 1960. Pp. 360. 32*s*.)

The relations between the trade unions and the Labour Party present one of the most baffling problems of British politics. This has not prevented them from being made the subject of sweeping assertions which with depressing regularity cancel each other out. According to the occasion the unions are said to dominate the Party, or the Party the unions. The union block votes at Party Conference are claimed to be both a natural instrument of democracy and an expression of almost arbitrary power. At one time we are told that it is the unions which keep the Party's feet on the ground, only to hear later that they are a decided electoral liability since they create an unfavourable Party image in the minds of middle-class voters.

No doubt it would be harsh to suggest that most of the people responsible for these contradictory statements have an axe to grind and are not too bothered about the facts, but one thing is certain. Until now the facts have never been properly analysed by someone whose job it is to do this as accurately and dispassionately as he can. Mr Harrison has remedied this deficiency with a thoroughness that leaves little excuse in the future for anyone to indulge in myth. His book is a noteworthy achievement, as an exercise in political analysis and in the writing of recent history, not least because he has had to distill judgment, selectively and critically, from a variety of sources which do not yield easy results.

Harrison concentrates his treatment of the subject around three themes. The first is the financial side of the alliance, the payment of the political levy and the extent of the unions' contribution to Labour Party funds. This involves him in some tricky calculations which he pulls off with reasonable success. In dealing with the change from 'contracting-in' to 'contracting-out', following the repeal in 1946 of the 1927 Trade Union and Trade Disputes Act, he corrects the exaggerated impression given by the official statistics of its effect on the numbers paying political levy. On his estimates the proportion of actual contributions collected rose from 48 to 76 per cent, not to 91 per cent as the Chief Registrar's figures have it. Nevertheless it was worth roughly two million contributors to the unions' political funds. Though they were, he says, 'an inglorious acquisition', there is no real case against an arrangement whereby 'once a union has democratically decided to take part in political activities, those who dissent should have to dissociate themselves from the decision.'

Given these means of collecting it, how much of the Labour Party's income is provided by the unions? The difficulty in calculating the proportion is the income of the constituency parties whose accounts are 'either incomplete or strikingly misleading'. The Transport House accounts show that: 'Seven pounds in every ten that the Labour Party receives centrally and at least two in every three that it receives regionally come from the trade unions'. But autonomous constituency incomes can only be estimated on scrappy evidence and the unions' contribution at this level is known to be relatively much less important. Making the most of what he has to go on, Harrison concludes that the union share of the total income of the Labour Party is almost certainly in excess of 50 per cent and possibly reaching 70 per cent. That it is 'overwhelmingly the largest single element' is 'the essential political fact'. To the question asked from time to time 'Will the Party and the unions split?' he answers: 'Perhaps the unions could go their own way, but so long as the Party is so heavily dependent on trade union money there can be little doubt what its choice must be.'

Since the unions so substantially pay the piper, do they also call the tune? And how do they compose whatever tune they want to call? These are the other two leading themes that the book develops in reverse order. The making of union politics is an aspect of internal union government and this is a subject which, despite its wealth of significance for the comparative study of democratic institutions, has only had its surface scratched. Understandably, Mr Harrison does not find his way very surely through this maze. He has interesting points to make about the treatment of political issues within the unions, starting at branch level, but is much stronger in revealing what happens than in explaining why. Indeed he never gets to grips with the main problem that politics are a subsidiary function for trade unions and one for which their processes of government have not been designed. The general impression created is of a massive indifference among the membership, not however of leaders exercising an entirely arbitrary and personal power. Only control of their power rests less on constitutional safeguards than on the conventional political morality of the movement.

The influence of the unions on the Party is analysed at Conference, within the National Executive, and in Parliament through union-sponsored M.P.'s. The sequence, as Harrison shows, is in descending order of significance. Conference claims most of his attention, the National Executive least, since little is published or available about its deliberations. His most important observation applies to both: 'every issue which troubles the Party divides the trade union group. When the leadership comes under attack – usually from the constituency section – a majority of the trade unionists almost invariably rallies to its defence. But they are scarcely ever a monolithic group.' Left-wing noises are clamorous and respectable; they come from unions just as much as from constituency parties. Still the Party constitution works, because on major policy decisions the leadership is left with the initiative and can count on enough union support to get its way. The Parliamentary story is separate and different. Within the House the unions are faced with a gradual waning of their influence. As this is due, by and large, to an unwillingness to let their most able people stand as candidates, it is a reflection on the value they now assign to direct Parliamentary representation as a political weapon.

A brief and rather unsatisfactory chapter on 'The Non-political Unions' completes the survey and brings Harrison to his Conclusion, which has a penetrating bite. He dismisses the likelihood of any headlong collision between Party and unions. 'The greatest danger to the alliance is probably not explosion but decomposition.' Why? 'The unions' hopes from Labour are less and less related to their industrial needs. Today their support is based much more on general political grounds. Are such considerations sufficiently powerful to enable trade union leaders to "sell" political action to their members?' If not, the prospect is a declining union participation without any sacrifice of existing union prerogatives within the Party, so that 'Labour might be left with the worst of both worlds'. 'On the one hand social change could make the Party's association with the unions a wasting electoral asset, and even an embarrassment. On the other hand, the unions' continued withdrawal from participation would leave the Movement like an ageing elm. Though outwardly it might be sound its heart would be dead.' Even those who find this an unduly pessimistic forecast can hardly deny that it states the real problem, so often obscured in the cruder journalistic speculation about 'splits'.

One final and more critical reflection on a book which in its own terms deserves high praise and emphatic recommendation. Why must political institutions be studied in isolation from political theory? Arguments within the Labour Movement about the relations between unions and Party turn, not only on the facts of this relationship, but on ideas about democracy. Much of this may be shadow boxing behind which stand the realities of power and interest, but the appeal to ideas, and ideals, is ever present and not without its effects. By not attempting systematically to relate his analysis to theories of democracy, which have been tested and found wanting in practice, Mr Harrison weakens the impact of his work. Intellectually he destroys the rosier illusions, as any impartial study of the facts must do, but will their influence on the minds of men be destroyed until alternative and better guiding principles have been established to replace them?

Oxford ALLAN FLANDERS

P. D. A. Harvey and Harry Thorpe. *The Printed Maps of Warwickshire, 1576–1900*. (Warwick: Records and Museum Committee of the County Council in collaboration with the University of Birmingham. 1959. Pp. x + 279, 11 maps. 30*s*.)

Map making is a craft as well as an art, and its sudden progress from crudity to measurement is not the least of the technological developments of Tudor England. The landowner's rôle as patron of large-scale estate plans is well known. Such plans were hand-tailored to the patron's measure. A different type of customer, nearer to ready-made tailoring than made-to-measure, awaited the printed map. Walsingham and Burleigh approved patents for cartographers who would collect and reproduce this useful topographical knowledge, useful for governing the provinces, useful for planning defence and useful (as it turned out) in the Civil War when (p. 25) Speed's maps were run off for the commanders. They even made useful backing for playing cards; and Gregory King took them round on Heralds' Visitations.

The economics of map publishing has not yet found its historian but Dr Thorpe's stimulating Introductory Essay (pp. 1–52) offers a few clues. Saxton's plates of 1576 were still running off saleable copies two hundred years later and a plate from Yates's map of 1793 became a tea-pot stand before turning up in a garden (p. 41). Saxton and Speed brought their maps to the market in atlases, but the author who required map illustrations was an important patron of the early craft. The sixth edition of *Brittania* in 1607 had maps by Kip (after Saxton) and in 1656 Sir William Dugdale drew his own maps for *The Antiquities of Warwickshire*, and for the second edition in 1730 Henry Beighton used material prepared for his magnificent one-inch map of 1728. Dr Thorpe's essay successfully canonizes Beighton as the best type of cartographer, who sought to make his maps show not only rivers, hills, parks and churches but also the minerals, spas, mills, pits and steam engines of the industrializing countryside. The printed map had become complementary to printed history. Historiographers will one day note how late the English historical journals admitted this marriage. The virginity of the premier English historical review is (I think) still beyond reproach in this matter.

Dr Thorpe's essay is followed by a list of railways and railway projects in the county, with dates. The tradition of anticipating exploration by adding a few dragons and sea-monsters died hard: canals that never watered and railways that never steamed found their way to maps in the effort to keep up to date with the projectors and with rival cartographers.

Mr Harvey's detailed chronological Catalogue is preceded by eleven plates offering examples of the more important maps discussed. After Mr Harvey's meticulous magnifying-glass scrutiny of variations in editions it should never again be possible to misdate a Warwickshire map. The Appendix includes Ordnance Survey maps, which – over-running the county boundaries – are not considered 'county' maps; and rather illogically the Six Inch and Twenty-five Inch O.S. plans which do respect the bounds.

University of Leeds M. W. Beresford

ELIZABETH CRITTALL (Ed.) *The Victoria History of Wiltshire, volume IV.* (Oxford University Press for The Institute of Historical Research. 1959. Pp. xx + 486. 147*s*.)

This is a handsome and substantial volume. Whatever strictures may be levelled at the topographical sections of the Victoria County Histories, no one will deny the value of the volumes containing the general chapters. They have not moved with the times in every respect – the choice of subjects for general treatment is still somewhat out of date, allowing a section of two pages on freemasonry while nothing is said of provident and benefit societies and almost nothing of trade unionism – but the scope and approach of the main chapters in this volume make them models of their kind.

The major articles are concerned with agriculture, the cloth industry, and engineering and railway works. Subsidiary articles deal with the lesser industries, namely bacon-curing, dairy production, the manufacture of india rubber, tanning, gloving, paper-making, the manufacture of tobacco and clay pipes, stone-quarrying, iron-working, and bellfounding. There are short articles on roads, canals, and railways. The tax assessments and poll tax lists of 1334 and 1377 are printed in full, followed by tables of population, 1801–1951, to which are appended the very enlightening explanatory remarks concerning marked changes in population in some parishes. There are chapters on sport, spas, freemasonry, and finally a section on the royal forests and Cranborne Chase with maps of the forest boundaries. The whole volume is pulled together by a short general introduction by Dr W. G. Hoskins. There is so much useful matter in these pages that it is a pity that those scholars who do not wish to pay seven guineas for the whole volume cannot buy some sections singly.

The chapters on agriculture, textiles, and engineering, which are given pride of place, are without exception outstandingly good. I would criticize Dr Kerridge for his jungle of footnotes which makes it difficult for the reader to lay his hands readily on the most important sources. But there is more to praise than to blame in this chapter, and all agrarian historians will do well to ponder Dr Kerridge's spirited defence of common field regulations on the grounds that they prevented bad farming. Even Mr Thompson, in the chapter on the period since 1870, admits the virtues of the old sheep-corn system. It was self-sufficient, self-contained, and utterly reliable, and as A. G. Street has pointed out in the light of later and bitter experience, it was an altogether satisfying system to the farmer because it kept the land in good heart from one generation to the next.

The four chapters on agriculture are all good value. Their one defect is the absence of co-ordination between them. Miss Richenda Scott's account of medieval agriculture, though extremely illuminating in many unusual ways, takes no account of the different farming regions of the county. The reader, therefore, embarks on Dr Kerridge's chapter to find that already in 1500 there were two distinct systems of farming in the county. The chalk and limestone lands had open fields, large farms, the typical hierarchical class structure associated with open field areas, and a sheep-corn husbandry. North-west and south-west Wiltshire were dairying regions with small family farms and much old enclosure. Obviously, these differences did not emerge overnight. One is left wondering whether Miss Scott has not missed some important clues to their evolution. Dr Kerridge supplies a useful map of his regions (though it does not guide the student with a single place-name). But Mr Molland and Mr Thompson, while recognizing the two different systems of farming, refer only casually to the regions and leave the reader, perhaps falsely, with the impression that they are in some respects different from those of Dr Kerridge. Certain other themes are pursued by one writer and neglected by others. Dr Kerridge, for example, emphasizes the contrast in social structure between chalk and cheese Wiltshire. This must have had profound social and economic causes and consequences, but the subject is all but ignored in the other sections. Mr Molland and Mr Thompson give attention to the problems and policies of large landowners, while Dr Kerridge, who might have had some useful observations to make on the sixteenth and seventeenth centuries, virtually overlooks the subject. Another strange omission is the absence of any reference in the later sections to agricultural unionism.

The same lack of co-ordination between writers shows itself in the two chapters on the textile industry. Both are models of clarity and exact scholarship. But since they take no account of the sections on agriculture – even the map of clothing areas is reduced to a different size from the farming map – an important point is missed, namely that the textile regions of Wiltshire were almost identical with the dairying regions. The small family farms in old enclosed countryside were also the homes of the handweavers. The point is worth far more emphasis than the brief sentences accorded it at the very end of Dr Kerridge's chapter. For Wiltshire is not the only county where these things went together. Cheese Wiltshire is remarkably similar in many respects to the clothmaking, dairying, old-enclosed region of central Suffolk, and the partly-dairying, partly-feeding, old-enclosed, clothmaking region of the Kentish Weald.

There is no space to do justice to the merits of the many chapters in this book. The rise of the cloth industry is probably as well-documented here by Professor Carus-Wilson as it can ever be. Its decline is thoroughly investigated by Miss Mann, though she remains puzzled and dissatisfied by the conventional explanation of its causes. Her problem is not unique, for no one has yet succeeded in explaining fully the decline of the cloth industries of Westmorland and Kent. Since they were all rural domestic industries, might it not be worth considering whether their decline was in some way associated with changes in the agricultural, rather than the industrial, organization of these semi-farming, semi-industrial communities? Mr Eversley's chapter on engineering and the railway works is a fascinating account of the surprising expansion of industrial Wiltshire. The history of the railway works at Swindon is a saga in itself, unfolding a tale of optimistic and adventurous youth (did I. K. Brunel really receive a salary of £2300 before 1843?) transformed by age and experience into a wary and prudent old man. The volume contains some fine photographs, some extremely useful maps, and is, as usual, a pleasure to behold.

University of Leicester JOAN THIRSK

TREFOR THOMAS and KATHARINE S. WOODS. *Report on Country Town Industries of South-West England.* (Pp. 42. No price.)

This investigation is one of three carried out under the general direction of the Agricultural Economics Research Institute at Oxford for someone vaguely described as the Development Commissioners. The terms of reference were 'to enquire into the present position and probable future development of small industries in country towns in their relation to agriculture and to the welfare of the rural community'. The other two enquiries concerned East Anglia and

Wales. The South-West England survey was originally carried out in 1946–8, revised in 1955, and covered the country roughly west of a line from Bath to Weymouth with the exception of the larger towns. It is based almost entirely upon official statistics of one sort and another, for a most abnormal period (though corrected down to 1954), and to that extent presents us with a picture of the industrial economy of the region during the ten years after the end of the Second World War. In many respects it is already out of date. The historical information in the report is negligible and is derived from elementary sources; but occasionally there is something worth having. Thus the considerable aircraft industry at Yeovil, now making mainly helicopters, developed from a foundry making the Nautilus grate, which then turned over to two-stroke motor cycles, and so came into aircraft in the year 1915. The report wisely stresses the great influence of personal character and particular families upon industrial development, especially in the small towns. This would be equally true of large towns. It is a useful corrective to the current fashion for trends, interest rates, and the other paraphernalia of economics. The personal factor is always in danger of being ignored or depreciated in economic history. In this reviewer's opinion, at least, the report would have been infinitely more valuable and readable if it had concentrated upon three or four carefully selected country towns in the South-West, and had applied the historical method to the enquiry, over say the last one hundred years. The fate of the English country town during this period is an absorbing subject, but it cannot be understood simply from current statistics.

All Souls College, Oxford W. G. Hoskins

Calendar of Treasury Books preserved in the Public Record Office. Vol. XXIX, 1714–15. Part I (London: H.M.S.O. 1957. Pp. cdxxviii.) Parts II & III (London: H.M.S.O. 1959. Pp. v + 872 & 347. £6.6s & 75s.) Vol. XXX, 1716. Part I (London: H.M.S.O. 1958. Pp. cdLI + 451. £4.17s.6d.) Part II (London: H.M.S.O. 1957. Pp. vi + 840.) Vol. XXXI, 1717. Parts II & III (London: H.M.S.O. 1957. Pp. v + 544 & iii + 607.) Vol. XXXII, 1718. Part II (London: H.M.S.O. 1957. Pp. vi + 873.)

These eight books follow the same plan as their predecessors, with one important exception: the late Dr W. A. Shaw's practice of writing lengthy introductions to sets of volumes has been abandoned in favour of short prefaces to the volumes containing the accounts of public revenue and expenditure, two of which, prepared by Mr F. H. Slingsby of the Public Record Office, appear in the present series (Vols. XXIX (i) and XXX (i)). These give the statements of revenue and expenditure for 1715 and 1716 in detail, and show how complex the revenue, which amounted to roughly £7,000,000 p.a., had become as a result of the war. Apart from direct taxes it was parcelled up into innumerable groups of excise and customs duties, many of which served as 'funds' to pay the interest of long-term loans. Already by 1714 this made taxation, as contemporaries complained, a subject which only experts understood.

The Calendar is much less satisfactory as a source for the government's capital liabilities than it is for its income. The Treasury Board Minutes, and Warrant, Order, and Letter Books, which are the chief materials calendared, are concerned with the day-to-day administration of the public revenue, and give no more than fragmentary glimpses of the National Debt, swollen to over

£40,000,000 by the war, and a prime object of government concern at this time. For this one must turn to the statute book, the *Commons' Journals*, and the Treasury Papers. For instance, the old *Calendar of Treasury Papers* shows (1714–19, p. 248, no. 4) that there is a 'state of the National Debts' for 1716 which the reader, baffled by Mr. Slingsby's inadequate summary in his preface to vol. XXX (i) of the present series, would be happy to see. Again, only certain parts of the important financial operations of 1717, when Parliament had under consideration the conversion of the National Debt from 6 percent to 5 per cent and the funding of several millions of floating debts can be followed in the Treasury Books (Vols. XXXI (ii) pp. 236–7, XXXII (ii) pp. 129–33.) For a clear view of the size of the debt at this stage and what it was proposed to do about it, the reader must go to the *Commons' Journals* (e.g. *H.C.J.* 18 pp. 497 *seq.*). It seems worthwhile to enter this caveat, for much of the material calendared, interesting though it is, is only significant when seen in relation to the financial policy of the period, which centred on the repayment, or at least the reduction, of the government's debts. There is a case here for the restoration of fuller editorial introductions.

The volumes under review take the Treasury Board Minutes, Warrants etc. up to the end of 1717. The former series is particularly interesting in showing the day-to-day control which the five commissioners exercised over all aspects of the collection and expenditure of revenue, and thus, in practice, over most branches of government. Many of the matters dealt with were of great complexity (e.g. the case of General Will's clothing assignments, vol. XXX (ii) p. 41); the Treasury Board was a good business school for practical men. During the period 1714–18 there was one Lord Treasurer, Lord Shrewsbury, who left office in October 1714, and four First Lords of the Treasury: Lord Carlisle to October 1715, Robert Walpole to April 1717, James, later Lord, Stanhope to March 1718, and then Lord Sunderland, who held office until April 1721. Carlisle was a less regular attendant at the Board than his successor Walpole. Stanhope was frequently absent. Sunderland was less often in the chair than his assiduous and crafty Chancellor of the Exchequer John Aislabie, who can be seen in these volumes, first as Navy Treasurer, then as Chancellor, establishing the links with the South Sea Company which were to end with the 'never-to-be-forgot-or-forgiven' South Sea scheme (as Walpole described it) of 1719–20.

It was suggested earlier that these volumes are not very satisfactory as a source for studying the financial reforms which the government undertook after 1714, culminating in the largely successful, though scandalously handled, attempt to persuade the owners of irredeemable annuities to exchange them for redeemable South Sea stock in 1720. They do, however, contain a great deal of detailed information of an interesting and sometimes completely unexpected nature (e.g. the lists of Jacobite prisoners shipped from Liverpool in 1716, vol. XXXI (ii) pp. 203–10). The great London merchant Sir Henry Furnese's remittances for payment of the forces abroad between 1705 and 1710 are given in detail (*ibid.* pp. 242–47). The damage caused by riots against nonconformist meeting houses in Staffordshire, Lancashire, Shropshire and some other counties in 1715 was compensated by Parliament, and the Treasury warrant (*ibid.* pp. 184–89) carefully records the sums paid, amounting to £5,234, the names of the payees, and the causes of payment; for instance 'one horse, the property of one William Parkes, lent to one Lowe to oppose the rioters: damaged, £2'. The mechanism of short-term borrowing, principally by cash loans from the Bank of England on security of deposits of Exchequer tallies, is shown by numerous entries. The reports of the 'Equivalent Commissioners', appointed to ascertain Scotland's share of the National Debt, and of the commissioners appointed to determine the debts of the Army, are printed in full (vols. XXXI (ii) pp. 322 ff. and XXXI (iii) pp. 732 ff).

An item of considerable interest is the first long-term loan administered by the Bank of England. This was for £910,000 for the service of the year 1715, and the Directors of the Bank proposed to the Treasury Lords that the loan should be 'transferable as easily as stock' (vol. XXIX (ii) p. 284). Their Lordships replied that they had no objection 'provided it can be made practicable'. The loan itself, owing to the Jacobite rising, was only partly subscribed, and the government in effect took up the unsubscribed stock itself (*ibid.* p. 291). Its significance, however, was that for the first time the system of double-entry book-keeping, and ordinary transfer books, used by the Bank and other companies for their own stock, was applied to a government loan. Previous long-term loans from the general public had been administered by the Exchequer and (like similar loans in France and Austria at this time) were transferred, like land, by elaborate deeds between buyer and seller. The substitution of company methods of transfer, which were used in nearly all subsequent loans, as the administration of the National Debt fell more and more under the control of the Bank, did as much as anything to stimulate the turnover of government securities, and thus to foster the growth of the London Stock Exchange.

St. Catherine's Society, Oxford P. G. M. Dickson

GENERAL

J. R. Hicks. *Essays in World Economics.* (Oxford: at the Clarendon Press. 1959. Pp. 274. 21*s.*)

Professor Hicks's articles on theoretical subjects have gained as large a place on the reading-list of economists as those of any other contemporary writer, though they have never been collected into one volume. The present book brings together the fruits of his other work, since the war, in the field of applied economics. Several of the articles in question are already very well known in their present or an earlier version; the reader will find here the famous article of 1947 on economic recovery after war, the Inaugural Lecture on the dollar problem, the Presidential Address of 1955 to Section F of the British Association on the economic foundations of wage policy, and the diagnosis of the causes of world-wide inflation in the middle fifties which is an important supplement to the memoranda published by the Radcliffe Committee. There are also a number of articles, especially those forming the second part of the book, on underdeveloped economies, which have not been so widely accessible, as well as three supplementary notes – one on wage-theory, one containing the author's second thoughts on 'import-bias' and the dollar problem, and the third a reflection on the Samuelson factor-price equalization theorem – of which theorists will wish to take note.

The 'manifesto' which Professor Hicks incorporates in his preface nominally sets the tone of the book. It sets forth the author's realization that there are other values besides economic welfare, that they may compete with it, and that diminishing marginal utility is in some sense an attribute of all of them. It is less easy for the reader than it perhaps was for the author, however, to see how this realization affects the subsequent chapters: Professor Hicks's concern is with economic analysis, modified only to a limited extent in the light of political and other considerations, and this is clearly a specialization justified by the principle of comparative advantage.

From the many points on which one might comment in this collection, the author's views on inflation may perhaps be selected first. The essay called 'A World Inflation?' is of commendable comprehensiveness, which has not often been achieved by writers in this field (except in the admirable Surveys of the United Nations), and it demonstrates how, in these matters where international influences are important and international comparisons possible, comprehensiveness pays. The central point that emerges is the difference, in the period 1953–57, between the countries that experienced a small degree of price-inflation (notably the United States, Canada, and Germany) and those that experienced a moderate one – typified by the United Kingdom. (Professor Hicks also has interesting things to say about the rest which mostly experiencd relatively severe inflations.) The starting-point in accounting for the difference between the two main groups is the devaluation of 1949, which administered to the devaluing countries both a 'demand pull' acting directly and indirectly through the increased profitability of the exporting industries, and a 'cost push' which acted mainly through imports and was accentuated (in the United Kingdom, at least) by the reduction of food subsidies. In the controversy about the relative importances of these two channels of influence, Professor Hicks must be classed as awarding the greater weight to 'cost push'. He places emphasis especially upon the 'push' of import costs consequent upon the devaluation of 1949; his theory that the short-run equilibrium value of many currencies (including sterling) was very much lower in the period when post-war recovery was incomplete than it subsequently became is a stimulating one. It could, perhaps, be generalized as a theory that *all* major adjustments in the terms of trade of manufacturing countries produce their full result on the supply side only after a time-lag of something approaching a decade, so that, in the absence of clear foresight and massive international reserves, every major adjustment is likely to be conceived on an excessive scale.

Professor Hicks's other major theme is concerned with underdeveloped countries. His introductory essay here deals with the pattern of development in relation to a very general picture of ultimate comparative advantages. Countries poor in natural resources are seen to be ultimately specialists on manufacturing, but the task of making them so is very much more than a matter of protecting their manufacturing industries and hoping for the best; in the short run the countries which have plentiful resources, and are in the long run destined to remain largely primary product exporters, are likely to beat them at that game. The remaining essays in this section do not give great support to this thesis, but they illustrate the versatility of the really good economist, stimulated by a variety of practical problems.

University of Leeds A. J. Brown

Historia Agriculturae. *A Yearbook issued by the Institute for Agricultural History.* Groningen. vol. V. 1959. (Groningen: J. Wolters. Pp. 288. *fl.* 21.50).

This exceedingly useful periodical is now well established. It contains perhaps the most comprehensive annual bibliography of sources, current books and periodical contributions to the history of agriculture all over the world. The work is necessarily co-operative, and the names of the international contributors are sufficiently well known to ensure that, though selective, it is a catalogue of all the worth while contributions made in any year. In addition it indicates sources of lists of the publications dealing with lesser areas and briefer periods which are now so numerous. The current volume is a bibliography of books and articles on agricultural history published during the year 1955 in most European countries, in America, Africa, Australia, Israel and Japan. In addition to the annual bibliography, which is, in the nature of things, bound to be a few years in arrears, the Yearbook usually contains a document illustrative of Netherlands farming history. This issue includes the agricultural notes made by J. Kops, then chief of the Netherlands Agricultural Department, when he travelled through the country with J. Goldberg, Minister of Commerce and Industry in 1800. Goldberg's idea was to collect information for a statistical survey of the Netherlands at that date; the plan was not entirely successful, but the survey is of marked significance. The document is introduced by Dr L. S. Meihuizen, Director of the Institute. *Historia Agriculturae* is a publication that should be on the shelves of every academic library of a university or other institution where agricultural history is studied.

Sudbury, Suffolk G. E. FUSSELL

R. J. SHAFER. *The Economic Societies in the Spanish World, 1763-1821.* (University of Syracuse Press. 1958. Pp. xiii + 416.).

The Economic Societies of Friends of the Country founded in Spain and America in the second half of the eighteenth century represented the attempt of a small educated minority to coax or drive the sluggish currents of Spanish economic life into more modern – which at that time meant largely French – channels. About seventy towns in Spain and a dozen or so in America possessed societies at one time or another. They were entirely private organizations, though under the relatively flexible administration of Charles III they enjoyed some official encouragement. They were neither guilds nor chambers of commerce; their interests were chiefly theoretical; they sought to educate public opinion in economic matters by organizing lectures and discussions, by supporting libraries and educational institutions, by financing publications. Though they sometimes addressed memorials to Government, there was nothing revolutionary about their aims, at least in the political sense, and when revolutions and wars of independence broke out, many of the leading members took the side of royal authority.

Little has hitherto been written about the Spanish societies, and next to nothing about the American ones. The interest of Mr Shafer's book lies chiefly in his description of the American societies, particularly those of Havana, Guatemala and Lima, which were among the most active. His account is clear and critical, and as thorough and well documented as the fragmentary records allow. He analyses fully the influence of Campomanes and, through him, of the French and English economic theorists of the time. His book is a valuable addition to our understanding of the intellectual background of the wars of independence.

On the question of what influence, if any, the societies exerted on the actual course of events, Mr Shafer is unable – as might be expected – to be precise. In general the answer seems to be: little or none. With the general hardening of conservative opinion after 1789, they lost what official encouragement they had. They were regarded by the Government as advocates of unwelcome change; and they did in fact tend to emphasize the differences between the interests of colony and metropolis. They were not used, as they might have been, as a bridge between Creole and Peninsular points of view. Nor, in Mr Shafer's opinion, did they greatly influence revolutionary thinking. They were confined to a small and theoretically-minded minority. In the first two troubled decades of the nineteenth century most of them languished and disappeared.

University College, Ibadan J. H. PARRY

DAVID S. LANDES. *Bankers and Pashas: International Finance and Economic Imperialism in Egypt.* (London: Heinemann. 1958. Pp. xvi + 354. 30*s.*)

Professor Landes has been very fortunate. While studying the rôle played by business men in French economic development he discovered in the vaults of the Bank of France correspondence between Alfred André, a Paris banker, and Edouard Dervieu, a financier in Alexandria, over most of the 1860's. Out of these letters he has fashioned a fascinating picture of business in contemporary Egypt. Unlike many economic historians, he has a story worth telling for the sake of the plot as well as the historical background.

This is not to belittle the author's contribution to a most illuminating book. Rounding off the story required much research. Nobody is better qualified to set the scene than Professor Landes. Drawing on English, French, German, Dutch, Greek and Portuguese sources, he brings to the task great thoroughness and mastery of detail. The first 68 pages are taken up with a description of the international money and investment finance markets, followed by another 33 pages on conditions in Egypt in the mid-nineteenth century. While international finance may be familiar to some readers through the printed sources to which Professor Landes acknowledges his own indebtedness, few will not rub their eyes at his revelations concerning business activities which take place in Egypt. Having thus prepared the ground, he can embark on his story without subsequent digression.

The foreground is occupied by the rise and fall of Edouard Dervieu, a financier not quite unscrupulous and dishonest enough for conditions prevailing in Egypt. The actual story takes us only from the cotton boom inaugurated by the outbreak of civil war in America to the after-effects of the Overend Gurney crisis – international events impinging directly on Egypt, a major cotton producer and a happy hunting-ground for investment financiers. Behind it unfold capital projects in profusion, most of them abortive, all much too vast for Egypt, of which the Suez Canal is merely the vastest. The men who peddled, or sought to profit from, these projects, ruthlessly squeezing dry the Egyptian lemon by any means and on any pretext, included 'the refuse of Europe' – the quotation is *The Times*'s, not Professor Landes' – protected by extraterritorial rights and consuls backed by Western powers. Resistance was offered by a succession of Egyptian rulers, whose pen-portraits recall Madame Tussaud's chamber of horrors, oppressing a mass of wretchedly poor cultivators, and powerless officials lusting for an opportunity of venting their resentment on the privileged foreigners by oppression, discriminatory taxation and expulsion, if not mass murder. To do business in this atmosphere meant living on the edge of a volcano; no wonder percentages of interest were reckoned per month, at best per half-year, rather than per year, and Europeans anxious to make their fortune and catch the boat home considered no holds barred. In fact, all of them made huge profits; not one extricated himself without considerable loss; many were ruined. This is not as paradoxical as it sounds. The ultimate debtor in Egypt was always the viceroy; all rulers grossly overspent their revenues, then resorted to the public debt which became ever more unmanageable. Hence stupendous profits accrued to foreigners in the form of unenforceable claims, either on the fisc or on the viceroy's private fortune, neither of which could pay old debts except by incurring new. A business man in Egypt had to be an adept at two quite distinct arts of cajoling or bullying the public debtor: to incur a debt to him rather than to any other financier, and to repay him rather than any other creditor. None of the practitioners described by Professor Landes ever became complete master of either art, but the shifts to which they were driven and the degree to which they prospered and failed provide him with a story told in racy and amusing language.

The London School of Economics WALTER M. STERN

GERMANY

(Edited by W. Gonze)

ALEXANDER BERGENGRUEN. *Adel und Grundherrschaft im Merowingerreich. Siedlungs – und standesgeschichtliche Studie zu den Anfängen des fränkischen Adels in Nordfrankreich und Belgien.* (Vierteljahreschrift für Sozial- und Wirtschaftsgeschichte. Beiheft 41. Wiesbaden: Franz Steiner. 1958. Pp. 219 + 2 maps. DM 21.-.)

This book, a thesis for the University of Hamburg, 1956, would deserve a more encouraging opinion if the author were less speculative and more precise. He deals with the important question of the origins of the early Frankish nobility. Like a number of his forerunners, he arrives at the conclusion that there was no nobility at all in the beginnings of the Merovingian state, because nobility is not mentioned in the *Lex Salica.* At a time when we are seeing the first results of a patient attempt to reconstruct inductively the structure of early Frankish society, this is a relapse into the old, deductive type of judgement based on legal texts, interpreted without sufficient knowledge of the society which created them. Certainly, Dr Bergengruen consults hagiographical, topographical and archaeological sources, but delimits the field of investigation in a most arbitrary way. Important general conclusions about the relations between the kingdom and the 'new nobility' are, for instance, based exclusively upon evidence in the one county of Meaux (Mulcien, and not 'Meldois'). In using neither the results of R. Sprandel (*Der merovingische Adel*, Freiburg, 1957) nor the important papers of Heinrich Dannenbauer, he avoids almost completely any serious discussion of views opposed to his own. The arduous problem of Merovingian charters (and their editions) is solved by using, without distinction, genuine and forged ones. Thus, the list of royal fiscs and possessions of the nobility (pp. 200–219) is to be used with caution, though it marks progress in comparison with Thompson.

Though he is conscious of the fact that the 7th Century shows in Gaul a completely developed manorial economy in the hands of the nobility, the author believes that the 'functional nobility' were shaped from an 'originally homogeneous class of warriors' (p. 185) only by the end of the 6th Century.

Apart from serious chronological difficulties, this is incompatible with the Edictum Chlotharii (614) – 'newly interpreted' by the author, and with facts given by the author himself in characterizing some important families of the end of the 6th Century.

Heidelberg KARL-FERDINAND WERNER

FRITZ RÖRIG. *Wirtschaftskräfte im Mittelalter. Abhandlungen zur Stadt und Hansegeschichte. Herausgegeben von Paul Kaegbein.* (Koln-Graz; Böhlau. 1959. Pp. xi + 707. DM 45,50.)

With the early death of Fritz Rörig in 1952 vanished our hopes of a monograph on the Hanse by the historian who was the highest authority in that field. Rörig's essay 'On the European town' in the *Propyläen-Weltgeschichte* (Vol. IV, Bln. 1932), re-edited and supplemented with a selection of more recent literature (*Die europäische Stadt und die Kultur des Bürgertums im Mittelalter*, Göttingen, 1955) is an approach to the *Gesamtschau* Rörig might have given us. The results of his investigation are scattered in a large number of essays in which he untiringly revised his conclusions in the light of the discussion provoked by his investigations. Some of them (cf. his bibliography in *Städtewesen und Bürgertum als geschichtliche Kräfte, Gedächtnisschrift für Fritz Rörig* (Lübeck 1953), p. 355) which deal with problems of urban and Hanseatic history are published in this voluminous book. The editor, Paul Kaegbein, a student of Rörig, stresses in his preface that he has selected only those essays in which fundamental trains of Rörig's thoughts on Hanseatic, urban and economic history found their final expression.

Lübeck, where Rörig spent a couple of years as an archivist and was able to gather a good deal of his primary source material, forms the starting-point. Thus the collection contains those important essays which in 1928 were published in the book *Hansische Beiträge zur deutschen Wirtschaftsgeschichte.* Some of them were preparatory studies for a social and economic history of early Lübeck, which Rörig had planned but was unable to complete. Another group deals with the wider area of Hanseatic history. The various lines Rörig followed here were to be gathered in a history of the Hanse on a broad basis which Rörig had planned since 1926. It is a pity that he only left the manuscript of an essay on 'The Origins of the Hanse and the Baltic Area' (pp. 542–603). The editor and A. v. Brandt (who prepared the text) are to be congratulated on printing it here.

From Lübeck and the Hanse the field widens to themes such as 'The interrelations between territorial and town economy' (1934, pp. 421–446) and 'The World Economy in the Middle Ages' (1933, pp. 351–391). More and more in his last years Rörig was occupied with those problems. He wrote on 'The Origins of Magdeburg and the older commercial History' (1952, pp. 604–637), an essay which gains special interest when it is compared with the investigations of Sture Bolin. From 1951 and 1952 come also the articles on 'The Sea and the European Middle Ages' (pp. 638–657) and 'The Town in German History' (pp. 658–680).

Rörig's conclusions provoked discussion. His *Reichssymbolik auf Gotland* (1940, pp. 490–541) was strongly criticized by the Swedish historian Yrwing (which might have found editorial mention), and the Scandinavian historians meeting at Århus in 1957 were generally unfavourable to the standpoint of Rörig and his students. Nevertheless, from a reading of these essays, the strong impression remains that Rörig, handling a mass of new details (cf. the Index) was able to analyse more sharply than ever before the *Wirtschaftskräfte*, the role of man in the economic and social life of an important epoch of medieval Europe, and we are glad to have this collection in such a handsome edition.

Nürnberg HERMANN KELLENBENZ

OTTO BRUNNER. *Land und Herrschaft. Grundfragen der territorialen Verfassungsgeschichte Österreichs im Mittelalter.* (Wien, Wiesbaden: Rudolf M. Rohrer. 1959. 4. verändert. Aufl. Pp. XIV + 463. DM 27.—.)

Brunner's famous book, first published in 1939, is one of the most illuminating works of German historiography of recent years so far as methodology and categories are concerned. The book is significant, first because Brunner swept away the misleading terminology of traditional social and constitutional history which, while adequate to the 19th century, concealed the reality of medieval life. Second, it is a thorough-going contribution to our knowledge of old Austria, founded upon sources of territorial law in Austria and Bavaria, mostly from the later Middle Ages. In the new, fourth, edition, the original questions and results remain almost unaltered. In detail, however, much has been changed since the third edition in 1943. In his preface, the author emphasizes that his findings cannot be applied immediately to areas other than Austrian and Bavarian territories. The task of establishing a typology of German territories would not be possible unless based upon a broader geographical extension.

Heidelberg WERNER CONZE

KLAUS WINKLER. *Landwirtschaft und Agrarverfassung im Fürstentum Osnabrück nach dem Dreissigjährigen Kriege. Eine wirtschaftsgeschichtliche Untersuchung staatlicher Eingriffe in die Agrarwirtschaft.* (Quellen und Forschungen zur Agrargeschichte, Vol. V. Stuttgart: Gustav Fischer. 1959. Pp. XIV + 160. DM 21.—.)

This study fits into the research work of Friedrich Lütge in two ways: a) as a continuation of the territorially limited research on the historical typology of the German agricultural system, b) as a contribution to the problem of the effects of the Thirty Years' War in the field of social and economic history. Based upon abundant archival material from the *Staatsarchiv Osnabrück* the author succeeds in comprising in his account the connexion of the agricultural system with the policy of the sovereign (*Landesfürst*). He comes to the conclusion that the devastations of the war were relatively small compared with the average in Germany, and that the reconstruction measures after the war have no novel features. Reasons of fiscal policy – the monetary needs of the Duke and Bishop Ernst August – take first place. The development of the agricultural system had been interrupted only temporarily by the war but had not undergone a thorough modification.

Heidelberg WERNER CONZE

HERMANN KELLENBENZ. *Sephardim an der unteren Elbe. Ihre wirtschaftliche und politische Bedeutung vom Ende des 16. biz zum Beginn des 18. Jahrhunderts.* (Vierteljahresschrift für Sozial – und Wirtschaftsgeschichte, Beiheft 40. Wiesbaden: Franz Steiner. 1958. Pp. XII + 606, 3 maps. DM 44.—)

This book makes use of unprinted sources from 60 European archives and libraries and supplies a large amount of material. It attempts to clarify five problems: the economic interplay between the North of Europe and the Iberian area of the Mediterranean; the part played by the financial centre of Hamburg within the scope of commercial capitalism, especially during the 17th century; the importance of the Jews for the development of modern capitalism; the financial foundations and possibilities of the absolutist *Fürstenstaat* (sovereign state) and its politics, and finally the part played by the family, the clan and social groups in economic life. The author only deals with the 'Sephardim', i.e. the 'Portuguese' Jews (the Spanish-Portuguese *Marranen*), and not with the *Ashkenasim*, the *hochdeutschen* (High-German) Jews on the lower Elbe. The settlements of the Sephardim in Hamburg (first traces in 1572), Altona (1611), Glückstadt (1619) formed together with Emden (1593) the northern border of the communities of the Sephardim. Further migration took place to Tönning-Friedrichstadt, Kopenhagen, Danzig, London (e.g. the family of de Casseres) and to the West-Indies, especially to Barbados. It was the wealthiest Portuguese from the lower Elbe who migrated, at the end of the 17th century, to the large settlement of the Sephardim in Amsterdam. The 17th century was the time of prosperity of the Sephardim on the lower Elbe in the fields of literature, religion and economy. *Warenfernhandel* (long-distance commodity trade), coining business, bills of exchange transactions and marine insurance prevailed in their economic activities; in the trade in spices and sugar, they temporarily held a pre-eminent position. The financially strongest individual enterprise was the house of Teixeira which the author already has dealt with separately (1955). The Hamburg firm of Nunes da Costa decisively supported the Portuguese Restoration. The mercantile economic policy of Christian IV of Denmark was essentially supported by the Sephardim of the lower Elbe. These worked in the princely service for other courts too as physicians, agents and residents. The annexes to the book contain various genealogical tables. This is a thorough and definitive account of the subject.

München WOLFGANG ZORN

OTTO SCHNEIDER. *Die Finanzpolitik des Kurfürsten Klemens Wenzeslaus von Trier.* (Finanzwissenschaftliche Forschungsarbeiten. Neue Folge. Ed. G. Schmölders. Heft 19. Berlin: Duncker & Humblot. 1958. Pp. 190. DM 15.—)

The enlightened government of the small territories of the late 18th century is a curious phenomenon of German history. While reforming and modernizing their small territories along the traditional lines of the *ancien régime*, the German princes of the age of enlightenment gained a momentary advantage in the general development of modern Europe, an advantage which allowed the German states of the earlier 19th century to persist in that comfortable state of enlightened despotism where bureaucracy reigned: meanwhile France and England advanced towards a democratic way of government.

Conventionally, the Prussia of Frederick the Great, Josephine Austria, the Sachse-Weimar under Charles August and the Margraviate Baden of Charles-Frederick serve as examples of this stage of enlightened absolutism. But research in the last decade has brought many proofs that this form of government was widespread throughout the territories of the Old German Empire. It was not only very small princes like the Hohenlohes in southern Germany who tried to bring their government into line with enlightened despotism but also the ecclesiastical territories which as a rule are regarded as the most backward areas of 18th century Central Europe.

One of these ecclesiastical lords infected by the ideas of enlightenment and trying to apply them in the government of their territories was the last Elector of Trier (Treves), the Archbishop Klemens Wenzeslaus (1768–1803), youngest son of the elector Frederick August II of Saxonia. Like most of his confrères, he found his territory in a deplorable social and financial state. His attempts to reorganize the finances of his electorate are the object of this thesis, completed in the seminar for public finance at the University of Cologne.

Dr Schneider confines himself strictly to financial institutions and financial policy. He analyses systematically the principles of that financial policy and registers the type of revenues and expenditures of the electorate's treasuries. As always, they were composed of many elements which resisted inclusion in a general system. Accordingly, the most urgent task for the administration was to try at least to achieve external order, to throw some light on financial conditions, and provide for annual budgets and a regular rendering of accounts. While this task went ahead new problems had to be solved. The more intensive form of government needed more money, and new types of government activities created new public needs. Thus the introduction of general school education required new means which could be obtained from the 'states' only by pressure. The fact that even in an ecclesiastical territory like Treves, the dissolution of monasteries for the benefit of education was considered seems to be the most typical expression of the spirit of enlightenment that reigned during the late 18th century.

Many of the reforms at which the Elector Klemens Wenzeslaus aimed remained unfinished or even failed completely. But it is typical that men like him should have tried to apply the ideas of their time within their territories in order to develop government and public administration into more just and reasonable forms.

Dortmund WOLFRAM FISCHER

HORST KRÜGER, *Zur Geschichte der Manufakturen und der Manufakturarbeiter in Preussen. Die mittleren Provinzen in der zweiten Hälfte des 18 Jahrhunderts.* (Schriftenreihe des Instituts für Allgemeine Geschichte an der Humboldt-Universität Berlin. Herausgegeben von Prof. Dr Gerhard Schilfert. Vol. III. Berlin: Rütten & Loenig. 1960. Pp. 796. DM 29.30.)

This voluminous study has been written entirely from the perspective of the Marxist idea of the class-struggle. It is therefore polemical through and through. Thus, distortions and one-sided statements cannot be avoided, and they become evident in the method of framing the questions, in the sources quoted, in the way they are used, but above all in the judgments. The latter transfer modern measures to the past, deliberately renouncing the first principle of historical method. The author speaks, for instance, of the 'anti-national' absolutism of the German independent states. Pinned down to Marx and Engels, he misinterprets the contemporary attitude to employment. If one overlooks this ideological attitude and its consequences, there remain some very remarkable scientific achievements. The study is limited to the middle provinces of the Brandenburg-Prussian state, especially to the Mark Brandenburg and to Berlin, whose industrial and social development is examined most thoroughly. The period most closely analysed is the second half of the 18th century, when the author shows with great precision the scope of manufacturing (which has been underestimated so far), taking into account the size of the factories, the nature and quantity of production, the number of labourers etc. Apart from distortions already mentioned, he places the development of manufacturing in its social and economic context (the strong position of the nobility, the weakness of the citizens, lack of capital etc.). Among the social consequences of manufacturing, the origin of an underpaid working class is stressed. The voluminous annex of printed documents (pp. 453–711) which complement and partly correct the Acta Borussica is of great value. As to the selection of the documents and their studies, Gustav Schmoller and his assistants had regarded the Acta Borussica (since 1892) from the point of view of the state which, so far as Prussian mercantilism was concerned, was by no means unjustified. His dogmatism prevents the author from grasping that the historical school was not a conspiracy aimed at forming a 'Hohenzollern-Legend' but that it represented the contemporary findings of research. Since then, this research has been surpassed and abandoned. One does not need to be a Marxist in order to consider the history of the Prussian factories and the factory labourers in its socio-historical aspect. But just because of the altered standards of research, the documents and the abundant material in the text of the book are welcome, just as the fruitful socio-historical study of the entrepreneurs and the labourers of the factories deserves to be highly acknowledged in spite of the misgivings mentioned above.

Heidelberg ERICH MASCHKE

FRIEDRICH FACIUS. *Wirtschaft und Staat. Die Entwicklung der staatlichen Wirtschaftsverwaltung in Deutschland vom 17.* Jahrhundert bis 1945. (Schriften des Bundesarchivs, Heft 6. Boppard: Harald Boldt. 1959. Pp. x + 271. DM 14.80.)

Although the author does not always succeed in placing his research in relation to the interaction of economy and government (Staat), he nevertheless works out clearly the development of a governmental economic administration since the *Kommerzialverwaltung* of the German territories which was influenced by mercantilism, and is in contrast to the *Kameralverwaltung*. One of the most important steps on the way to a unified administration of the Reich was the introduction and development of the *Ministerialverfassung* after the French pattern at the beginning of the 19th century. Out of the *Reichsamt des Inneren*, created by Bismarck in 1880, emerged finally in 1917 the establishment of the *Reichswirtschaftsamt*, the later *Reichwirtschaftsministerium*. Facius shows that two different trends led to its creation. On the one hand the desire of the entrepreneurs for a supreme economic institution of the Reich which should defend their interests against the administration of the war economy; on the other hand the tendencies to central economic administration, based on the nation-state, which were pushed out of the way in the Bismarck-Reich by the priority of social policy. It is astonishing to see how the potentialities of the *Reichswirtschaftsministerium* were partly curtailed by the government itself after World War I. In the last part of the book we see that homogeneity of economic administration was not realized even in the Third Reich. Dr Facius emphasizes that the aspirations of the Nazi dictatorship in pursuing the course of a centralized and planned economy were frustrated by over-organization and overlapping responsibilities.

Heidelberg DIETER GROH

THEODOR LINK. *Flensburgs Überseehandel von 1755–1807.* (Quellen und Forschungen zur Geschichte Schleswig-Holsteins. Vol. 38. Neumünster: Karl Wachholtz. 1960. Pp. 352.)

Flensburg, the capital of Schleswig which was linked to Denmark by a personal union, has played a considerable part in the commercial history of the North. Dr Link deals with an important period when Flensburg occupied second place within the foreign trade of the entire state of Denmark-Norway, i.e. the period from 1755 (the dissolution of the Danish West-India Company and the taking over of their colonies by the Crown) to 1807 (the out-break of the Danish-English War). A second volume is to deal with the period to 1860. Because of the geographical and political situation, the West-Indian trade represented the largest part of the transatlantic trade of the Flensburg merchants. The overseas trade of the city (which is described from documentary material of the Danish Reichsarchiv in Copenhagen, the Stadtarchiv Flensburg and the Landesarchiv Schleswig) is placed in the context of Flensburg's trade as a whole, the Danish-Norwegian trade and European overseas trade. The sugar trade and refining reached a considerable level. The dependence of the commercial trade cycle on political events is well elaborated, and interesting examples are quoted of regional trade crises. The statistical material (incomplete as to sources) is compiled in the annex.

Heidelberg ERICH MASCHKE

THYGE THYSSEN. *Bauer und Standesvertretung. Werden und Wirken des Bauerntums in Schleswig-Holstein seit der Agrarreform.* (Quellen und Forschungen zur Geschichte Schleswig-Holsteins, Vol. 37. Neumünster: Karl Wachholts. 1958. Pp. 558. DM 18.—).

This is, first and foremost, a popular book. It is therefore understandable that it lacks historical criticism and perspective. The author is not unbiased. He himself worked as an expert on agrarian policy in the *Bauernverein*, *Landwirtschaftskammer* and as a *Ministerialrat* in the Ministry of Agriculture. His book, however, deserves to be noticed by economic historians as a source as well as historical research. Although the author gives no footnotes he does not write only from his own memory and experience but bases himself upon sources from many public and private archives. Thyssen lays stress particularly on rural organizations since the early 19th century, from the *Landwirtschaftlicher General-*

verein onward up to the various rural pressure groups in the last decades including the *Reichnährstand* organization of the 'Nazi' period and finally the institutions developed since 1945.

Heidelberg WERNER CONZE

WOLFGANG KOELLMANN. *Sozialgeschichte der Stadt Barmen im 19. Jahrhundert.* (Tübingen: J. C. B. Mohr (Paul Siebeck) 1960. Pp. xvi + 315. DM 29.—.)

This social history of Barmen, the Westphalian textile town from which Frederick Engels came, is the first systematic study of a German industrial town in the nineteenth century. It is worlds removed from the work of the chroniclers and claims, with every justification, to be a contribution to the social history of nineteenth century Germany. The author has been careful to ask the right questions in the right order. He has divided them into six logically related categories and devoted a chapter to each. Starting with an examination of the town's economy, he goes on to deal with population changes, social stratification, the problem of the proletariat in the new society, religious and cultural life, and ends with politics. Each section is treated chronologically, and in a genuine historical fashion. Cross references are frequent. This is by no means merely a collection of independent studies on the same town, but unmistakably the work of a single mind, and one of considerable versatility.

Until 1914 Barmen's economy was dominated by the textile industry. It had grown prosperous on linen, and switched over to cotton by the end of the eighteenth century. The most striking thing about the subsequent economic history of the town was its successful struggle for survival in the face of British competition. Its success was due to the abandonment of the more straightforward type of work and the concentration on ribbon weaving, the production of laces, braid and a long list of similar fancy goods, which usually demand a high degree of skill. In most of these lines the introduction of factory organization was delayed until the last quarter of the century. Thus the economic and social structure of Barmen resembled that of Leicester or Nottingham more closely than that of any Lancashire town.

Perhaps the best chapters in the book are the ones dealing with population and social stratification, but the whole study is admirable. It is to be hoped, however, that when other historians take up the challenge to provide Germany with a series of comparative studies in nineteenth century urban history, they will not forget to supply the necessary maps.

University College of North Staffordshire E. P. HENNOCK

Schriften zur Rheinisch-Westfälischen Wirtschaftsgeschichte. Neue Folge der Veröffentlichungen des Archivs für Rheinisch-Westfälische Wirtschaftsgeschichte.

Vol. 1: Fritz Schulte. *Die Entwicklung der gewerblichen Wirtschaft in Rheinland-Westfalen im 18. Jahrhundert.* (Pp. 135).

Vol. 2: Alfred Engels. *Die Zollgrenze in der Eifel. Eine wirtschaftsgeschichtliche Untersuchung für die Zeit von 1740 bis 1834.* (Pp. 127).

Vol. 3: Horst Beau. *Das Leistungswesen des frühindustriellen Unternehmertums in Rheinland und Westfalen.* (Pp. 79).

(Köln: Rheinisch-Westfälisches Wirtschaftsarchiv. 1959.)

With the present three volumes, the 'Rheinisch-Westfälische Wirtschaftsarchiv' in Cologne continues its special series of publications on the economic history of the Rhineland and Westphalia. This plan is the more welcome as individual studies are generally lacking of this district which includes the greatest concentration of West Germany's industry. A gap can be filled here in German economic history, which will benefit by the close connexion between the archives and the school of economic history of the university. The present three studies were suggested by the late professor of economic history, Dr Ludwig Beutin. Written by young historians, they rank among the first products of the series.

Fritz Schulte gives an outline of the development of the Rhenish-Westphalian industrial districts in the pre-industrial era. Based on ample and diligently compiled sources his study points out clearly the prerequisites and the extent of industrial development as well as the structural changes, and elaborates the tendencies towards larger industrial areas. He does not content himself with compiling and interpreting the structural data but examines, among other things, the spiritual forces – the influence of mercantilism, of early liberalism and the Protestant and Catholic faiths – and the decisive influence of national economic policy, of the cities and organizations. He shows to what extent the 'industrial revolution' which spread in these areas in the 19th century had already been prefaced by developments in the 18th century. Thus, he does valuable preparatory work for a definitive history of industrialization.

Alfred Engel's study contrasts the circumstances in the Eifel during the time of the sovereign states (Fürstenstaaten) with those during the Prussian era. He shows how the boundries of 1815 and the customs policy thereafter disturbed a super-regional market which had been vital at an earlier date. This study too is based upon abundant material. It clearly explains why these borderlands lagged behind economically after the re-organization of the states in 1815.

Though a series of individual entrepreneurs' biographies has been used, some of Horst Beau's results seem to need revision, although they give a valuable insight into the education of entrepreneurs in the early industrial era. The conclusion that the 'empirical technician' was the genuine type of entrepreneur of early capitalism can be applied only to the Ruhr-district, whereas in the textile district of Wuppertal a completely different type of entrepreneur already prevailed. In spite of such reservations these studies give a good start to the new series.

Wuppertal-Langerfeld Wolfgang Köllmann

Geschichte der Kinderarbeit in Deutschland. 1750–1939.
Vol. I: *Geschichte* by JURGEN KUCZYNSKI.
Vol. II: *Dokumente* by RUTH HOPPE. (Berlin (O.): Verlag Neues Leben. 1958. Pp. 406 + 13 pictures, 339. DM 15.—.)

With this account of the history of child labour in Germany, Jürgen Kuczynski, one of the most renowned representatives of Marxist-Leninist economic history in the German Democratic Republic, complements his previous studies of the conditions of the labourers under capitalism. By child labour, he means not only the work of children in mills and factories, but also begging practised 'as a profession' (mainly in the 18th century and in the first half of the 19th century), children's employment in domestic work and agriculture and as newspaper-boys, errand-boys and servants. For the years from 1919 to 1939 he also includes in his description 14 to 16 year-old apprentices, unemployed youths and the juvenile members of the *Reichsarbeitsdienst*. Evidently this is done less for material than for ideological reasons since child labour no longer exists in mills and factories, and the orthodox Marxist feels obliged to demonstrate the 'capitalist exploitation' of children by the apprentices and the youths of the *Arbeitsdienst*, and the 'misery of the children under the conditions of capitalism' especially unemployed youths.

The author divides the abundant material into four chapters, each one dealing with a period according to the Marxist scheme of the stages in development of the methods of capitalist production in Germany. In the first chapter he deals with the period of transition from later feudalism to industrial capitalism (1750–1850); in the second chapter with the transformation from extensive to intensive exploitation in consequence of the increase in productivity and the accumulation of capital (1850–1870); in the third with early and fully developed imperialism (1871–1918); and in the fourth chapter with the general crisis of capitalism down to 1939. This chapter is the worst and gives fairly useful and reliable information only about the condition of the apprentices. The other chapters are, by contrast, based on a very much fuller exploitation of the sources. The abundant material includes, apart from contemporary publications such as newspapers, periodicals and pamphlets, and official statistics, reports, memoranda, acts, decrees etc., the comments, petitions, and proposals of the entrepreneurs, of the Social Democratic Party and the Socialist Trade Unions, as well as numerous unprinted documentary material (above all from the Deutsches Zentralarchiv and the Sächsisches Landeshauptarchiv); Kuczynski describes here in detail the different employments and the working conditions of the children (including working hours and wages), and their conditions of life, the conditions of housing and school, their state of health and their moral state.

The author pays special attention to the efforts of the government for reducing child labour in mills and factories, and to the measures and efforts of the manufacturers to avoid the laws and decrees enacted to protect children, or to prevent their application. He is of the opinion that child welfare legislation in Prussia was determined by the question of the children's future fitness for military service and remained practically useless as long as the 'capitalists' had an economic interest in employing children in factories. Just as the improvement of schooling had been caused by the increasing requirements of the intensified process of production, child labour in the factories had been reduced only when the process of technical perfection of industry production after 1870 had made the employment of children unprofitable and superfluous.

Typical of the justification of this debatable thesis and of Kuczynski's interpretative method as a whole is the completely unilateral and dogmatic generalization of particular facts according to Marxist points of view. In spite of the ideological partiality of the author which becomes evident throughout the whole description and is also proved by the author's wish to contribute actively to the 'socialist formation of conscience' (*sozialistische Bewusstseinsbildung*) in the German Democratic Republic, our knowledge of the conditions of working children is nevertheless enlarged with regard to material, and new and important aspects are opened up to the critical reader.

The volume of documents published by Ruth Hoppe deserves special attention because it contains unknown or so far unprinted documentary material (e.g. the instructive 'Umfrage des Staatskanzlers von Hardenberg an die Kgl. Oberpräsidenten vom 5.9.1817'), apart from known and printed sources.

Heidelberg HORST STUKE

HERBERT KÖTTER. *Landbevölkerung im sozialen Wandel. Ein Beitrag zur ländlichen Soziologie.* (Düsseldorf, Köln: Eugen Diederichs. 1958. Pp. 182. DM 13.80.)

This is an excellent survey of research in recent German agrarian sociology. Dr Kötter, who works in the Forschungsgesellschaft für Agrarpolitik und Agrarsoziologie in Bonn, puts the main stress on the relation between city and country, or rather, on the incorporation of rural life into modern industrial society, so that rural sociology is not looked upon as the description of conditions but as a process of modern history. A great deal of literature from the field of agrarian sociology has been used. This is an informative survey of the major trends of present rural development in Western Germany.

Heidelberg WERNER CONZE

PETER RASSOW und KARL ERICH BORN (Ed.). *Akten zur staatlichen Sozialpolitik in Deutschland 1890–1914.* (Historische Forschungen im Auftrag der Historischen Kommission der Akademie der Wissenschaften und der Literatur. Herausgegeben von O. Brunner, P. Rassow, J. Vogt. Bd. III. Wiesbaden: Franz Steiner. 1959. Pp. xix + 460. DM 45.—.)

Here, for the first time on a large scale, we are given documents for a verdict on national social policy from 1890 to 1914. Social policy for this period was considered to be known in its essentials; this knowledge, however, was based on minutes of Reichstag sessions and on monographs from different sectors, and is enlarged decisively by the present publication. Above all, two types of source are made accessible: the reports of the Federal ambassadors to their respective governments on the negotiations of the Bundesrat and important records of lawsuits in the field of social policy. As a basis of his account *Staat und Sozialpolitik seit Bismarcks Sturz* which appeared in 1957, Born, the editor of the book, used new sources which are published in the present book. The descriptive and documentary accounts are related, firstly because 'the major problems of the narrative: the incorporation of the labourers into state and Society, the right of the labourers to organize and the struggle of the monarchic state against the labour movement' were the 'standard for the selection of the sources' (XVII), and secondly because at the beginning of every chapter, reference is made to the narrative account. Thus, no lengthy introduction to the documents is needed. The structure of the book is chronological.

The value of the publication lies in the fact that Born has compiled all the available important comments from memoranda by employers' associations and chambers of commerce, important newspaper articles, and papers by Posadowsky and Hohenlohe. In view of his scope, it seems all the more curious that no consideration is given to those organizations which deal with problems of social policy, i.e. to the Trade Unions. (The 'Petition der Hirsch-Dunckerschen Gewerkvereine' to the 'Bundesrat', dated November 18th, 1885' which is printed as No. 61 in connexion with the discussion on the legal position of the professional associations, does not carry much weight among a total of 213 items.) It is almost unnecessary to recall that the Trade Unions expressed their opinion on the 'Zuchthausvorlage' as well as on the 'Reichsvereinsgesetz' and the 'Arbeitskammervorlage'.

In spite of the excellence of the editing of the sources, it must be said that their value is considerably diminished by the omission of documents which can only be procured with difficulty.

Heidelberg URSULA HÜLLBÜSCH

DIETRICH VON OPPEN. *Verbraucher und Genossenschaft. Zur Soziologie und Sozialgeschichte der deutschen Konsumgenossenschaften.* (Schriften der Forschungsstelle für Konsumwirtschaft. Herausgegen von Dr. Erich Potthoff. Gemeinsame Veröffentlichung der Verlagsgesellschaft deutscher Konsumgenossenschaften m.b.H., Hamburg und des Westdeutschen Verlages, Köln und Opladen. 1959. Pp. 111. DM 9.—.)

This inquiry was suggested by a conference of the 'Forschungsinstitut für Genossenschaftswesen' in Erlangen in 1953, where the conference dissociated itself from any kind of 'ideology' within the cooperative system and emphasized the primacy of commercial achievements, i.e., it tried to bring the cooperative societies up-to-date and suggested an up-to-date structure for them. The question arose whether the old theories of consumers' federations were still sufficient or whether they ought to be re-formulated.

From this starting-point, Oppen examines the social relations of the members to the cooperative society, basing himself on investigations carried through in 28 distribution points in 1954/55 by students of the 'Akademie für Gemeinwirtschaft' in Hamburg.

To clarify the new situation of the cooperative societies in today's market economy, Oppen gives in the first part of his account an outline of the 'binding forces of the past' (19–39) where he examines especially the relations between the cooperative societies and other organizations of the labour movement, and the significance of 'idea' and 'idealism' within the cooperative societies.

As a result of the new analysis, it becomes obvious that the cooperative societies have adapted themselves to the general change in conditions. They make less propaganda than any economic enterprises of our market economy, they have committed themselves neither politically nor socially. The general abolition of 'idealism', the emphasis put on the individuality and the emergence of purely economic interests become as obvious here as in other sectors. By joining constructive method with empirical results Oppen's account is one of the most important investigations of recent years in the field of social history.

Heidelberg Ursula Hüllbüsch

Friedrich Lütge. *Deutsche Sozial- und Wirtschaftsgeschichte.* (Berlin-Göttingen-Heidelberg: Springer Verlag. 2nd ed. 1960. Pp. xvi + 552.)

It requires a *tour de force* to compress the whole of Germany's social and economic history into a single volume. Professor Lütge achieved it in 1952; his second edition adds an analysis of the German 'economic miracle' up to 1958. He expands the bibliography, places more emphasis on structural changes and cyclical fluctuations, embodies further statistics, especially on foreign trade and national income, and accepts that recent research on the early years of the seventeenth century shows them not as a period of crisis, but on the contrary as an era of promising development cut short by the Thirty Years War. That cataclysm comes roughly half-way in the book. Having lingered lovingly over the manifold varieties of early agrarian constitutions, largely because much of his original work has been done in this field, the author in the second edition submits to a self-denying ordinance by increasing the space devoted to industry, trade and transport.

This work is written for a German student unfamiliar with social and economic history whom Professor Lütge introduces to the medium through analysis of events in German territories. The farther back in time, the less can Germany be delimited; the work is broadly based on the history of Western and Central Europe, at times confusingly so for the reader concerned with the difference of German from non-German history. The dividing line is drawn at the Thirty Years War; its devastating effect causes German history thenceforward to deviate from the broad stream of European experience. Professor Lütge discards the traditional categories of Medieval and Modern Period, breaking his chapters instead at Black Death and the Thirty Years War. These had a far greater impact on German history than the discovery of the New World, with which Germany maintained only unimportant and indirect relations for two centuries.

Few historians would venture upon the social and economic history of as large an area as Germany upon so confined a space. The author bestows much labour on the definitions and social genealogy of institutions; as much care goes to discussing their legal forms and justification as to economic realities, reminiscent of economic history written in Maitland's day. He steers a clear path through the many forms of feudal tenure in different parts of Germany. Frequently feudal tenancy proved acceptable to Carolingian peasants because under its terms they derived substantial advantages, not because it was forced upon them by the rapacity of enslaving landlords, as simplifying modern theory has so often held. Coming to more recent times, he re-establishes the view – contrary to frequent improbable assertions – that much German emigration after 1848 was politically, not economically, motivated. He is particularly illuminating and excellent on the failure of social ethos after 1918. Throughout the book runs the strong conviction that no events in social and economic history can ever be explained by a single cause. Though not scorning the jargon of sociology, he welcomes the occasional happy shortcut: having dutifully spoken of 'hypertrophy of food intake', he adds 'in good German – greed'!

Some points of particular interest suggest themselves. That German tribes at the outset of the Middle Ages in obtaining necessary living space poured out blood in preference to sweat may not be new, but is attractively put. Coniferous woods are considered one of Germany's typical features; Lütge explains that, far from being a natural condition, they are the result of deliberate planting from the eighteenth century onwards, often because the soil had become too impoverished to bear deciduous trees. Do we take it that, prior to the coming of *Mietskasernen* (large blocks of working-class flats) in the mid-nineteenth century, German workers owned their dwellings?

We may hesitate in one or two places. Can one really speak of a land shortage or an excessive division of holdings prior to Black Death? No doubt the population was underfed unless harvests had been good, but had not the fine balance between excessive supplies and famine been inherent in the economy since the beginning of time? In the nineteenth century, did Austria fail to join the *Zollverein* because her interests lay elsewhere? Was it not Prussia's deliberate policy to keep the common duties lower than Austria could afford, so as to secure German hegemony for herself? The reader is brought up against certain contradictions: if peasants had a scarcity value and landlords had to grant attractive terms to get their land cultivated, how could it be pressure of population which caused colonization of the East and attacks on Italy from the twelfth to the fourteenth centuries? Similarly if the dignity of, and the obligation to, labour had been embodied in the German ideology by Luther, why was it still so rarely accepted in the eighteenth century?

Professor Lütge proves himself a good European, not only by the breadth of his treatment, but also by his tactful discussion of the National Socialist era – not an easy task for a historian who had to live through it. But he is also a good German; certain events look different in his book from the way in which they appear to the observer beyond the German frontier. This applies to the German colonization of the East, described as a movement mainly dominated by the pouring in of goods and capital, the conversion of the heathens and the religious and cultural gathering to the German bosom, and contrasted most favourably with the 'exploitation' of extra-European colonies by Western Powers in the sixteenth century. Most countries did unlawful things in unlawful centuries, as a tactful commentator put it, but it is not so easy to exorcise the picture of two-faced Germany, the face turned towards the West illuminated by thought, philosophy and culture, the other looking towards the East distorted by rapacity, cruelty and oppression, nor to disregard the concern of Iberian Catholic missionaries with the souls of the American indigenous population. Nor is it a general impression that German political domination over Italy in the Middle Ages secured for the latter country tranquillity, order and prosperity. Coming from a country where the U-boat war originated, does the assertion that economic warfare was a British invention sound convincing? German famine in and after the First World War is attributed solely to the allied blockade, in complete disregard of the ineptitude of German agricultural policy which failed to provide for the minimum needs of the German population, especially by allowing farm labour, draught animals and fertilizers to fall well below minimum requirements.

The author's touch is not so sure in dealing with events outside as with those inside Germany. Wat Tyler's peasants, for instance, did not rebel in favour, but against re-introduction, of traditional rights and dues. Not in 1660, but some two centuries earlier, did England prohibit the export of wool and the import of woollen cloth. We know from Mr Charles Wilson's researches that Britain did not gain trading superiority over Holland at the end of the seventeenth century, but considerably later. The official gold standard was not introduced in Britain, nor silver money turned into token coins, in 1774. Supersession of craftsmen by machinery caused misery, heartburn and opposition in Britain as well as in Germany, though no eloquent dramatist pleaded for the cotton handloom weavers of Lancashire as did Gerhard Hauptmann for the Silesian linen weavers. Nor was there a general settlement of war debts at the height of the 1929–1933 slump; the hands of the United States were merely forced by all her debtors, Finland only excepted, ceasing to pay. However, echoes of this lack of settlement dogged financial arrangements between allies in the Second World War.

It would be ungracious to end on a carping note, especially where it fastens on minor points in a work admirable for its wide sweep and vision. All students of German social and economic history are in Professor Lütge's debt for having given them this comprehensive and valuable survey of Germany in which, while taking great trouble over detail, the author never fails to see the wood for the trees.

London School of Economics WALTER M. STERN

REVIEW OF PERIODICALS

GÜNTHER FRANZ. 'Die agrarische Bewegung im Jahre 1848', *Zeitschrift für Agrargeschichte und Agrarsoziologie*, VII (1959), 176–193.

The author begins by stressing the fact that the German peasants have withdrawn from political activity since the Peasants' War of 1525. The quiescence of the agrarian territories lasted until 1830 – even the liberation of the peasants was a magisterial act. Neither in 1830 nor in 1848 were political demands made by the peasants. In the peasant riots of 1848, the rural inhabitants of Germany put above all else the abolition of feudal charges. The main result of the revolution of 1848 for the agrarian sector is seen here as the end of the so-called liberation of the peasants. That meant the close of the Middle Ages for the German peasants. In conclusion, the author puts forward the thesis that in 1848 the German peasantry were in no way concerned with political ideas. Their demands were solely economic. Political ideas did not take hold until 1862, when the first peasants' association was formed in Westphalia.

PETER VON BLANKENBURG. 'Über den Begriff der Dorfgemeinschaft und seine Anwendbarkeit auf die soziale Situation der Landgemeinde', *Zeitschrift für Agrargeschichte und Agrarsoziologie*, VIII (1960), 46–56.

Starting from Toennies, the author enquires whether the concepts of *Gemeinschaft* and *Gesellschaft* can be employed with regard to the structural transformation of the rural community. He concludes that they cannot. Instead he suggests that the notion of the 'primary group' be applied to the static element in the interaction of the group and those of integration and disintegration to the dynamic element.

W. J. FISCHEL. 'Der Historismus in der Wirtschaftswissenschaft. Dargestellt an der Entwicklung von Adam Müller bis Bruno Hildebrand', *Vierteljahrschrift für Sozial- und Wirtschaftsgeschichte*, XLVII (1960), 1–31.

Fischel's essay is based on the thesis that the penetration of economic sciences by historicism can only be comprehended against a generally historical background, especially the background of the history of mind. Thus he begins with an explanation of the philosophical basis of Adam Smith's Economy. This approach is justified by the fact that the so-called 'historical school' of the German 'Nationalökonomie' is a response to the philosophical arguments of the classical school. Those who prepared the way for historicism are Adam Müller with his romantic idea of organism which is transferred into economics, and List with his *Nationales System der politischen Oekonomie* (National System of Political Economics). According to Fischel, List occupies an important position in this process in so far as he, by taking away the romantic impact from Müller, frees his ideas from their reference to the past and transfers them into the reality of his own time. Finally, the author emphasizes that the notion of the national economic organism (*nationaler Wirtschaftsorganismus*) represents the contribution of the historical school to the general process of the historization of the sciences as a whole.

Heidelberg DIETER GROH

H. HARTMANN. 'Die Akademiker in der heutigen Unternehmerschaft'. Eine Studie über Vorbildung, Alter und Funktionen von 2000 deutschen Unternehmern mit Hochschuldiplom. *Tradition, Zeitschrift für Firmengeschichte und Unternehmerbiographie*, IV (1959), 133–148.

By means of 6,578 biographies, Hartmann examines the question how many of today's German entrepreneurs have graduated from a university or university college, and what part this group is playing. 31 per cent of the persons in question have left the university college with a diploma; of these, 36 per cent came from technological colleges, 36 per cent have a diploma from the school of law or the school of economic science. 17 per cent of the leading personalities have a diploma in national economy. An examination of the age groups shows that in recent years a strong increase of new members is to be noted among the *Diplomkaufleute* (bachelors of commerce), *Diplom-Volkswirte* (bachelors of national economy) and the *Dr. rer. pol.* (D. of national economy). The examination as a whole shows that entrepreneurs need to be something more than 'personalities'. Aspirants from other schools closely connected with economics have better chances of promotion.

E. SCHRÖDER. 'Die Walder Gusstahlerfindungsgesellschaft'. *Tradition, Zeitschrift für Firmengeschichte und Unternehmerbiographie*, IV (1959), 149–173; 223–232.

Schröder reports on an attempt of a group of chemists from Walden near Solingen who in 1808 had joined in the 'Chemische Gesellschaft' to find a process of cast steel extraction. After a certain success, the 'Walder Gusstahlerfindungsgesellschaft' was founded in 1811 which almost coincided with the foundation of the firm of Krupp in Essen. Whereas the Walder had already experience in practical work, Krupp possessed considerable financial means, and this was to be decisive for further development. The petitions of the (Walder) company for state aid were finally rejected in 1823, not least because of the favourable results of the newly-founded cast steel plant 'Carlswerk' in Neustadt-Eberswalde. This ended the competition between Walden and Essen, and the company was wound up. The description is based on source material and supplemented by a part of the family history of one member of the Walden company (233–41).

W. Zorn. 'Beiträge zur Biographie des ostdeutschen Unternehmertums'. *Tradition, Zeitschrift für Firmengeschichte und Unternehmerbiographie*, V (1960), 197–204.

Dr Zorn publishes a list of entrepreneurs from eastern Germany with data on their lives and careers.

W. Rilke. 'Der allgemeine hannoversche Klosterfonds und die Hannoversche Klosterkammer'. *Tradition, Zeitschrift für Firmengeschichte und Unternehmerbiographie*, V (1960), 1–14.

The article gives an outline of the origin and the present situation of this national authority, unique in Germany, which administers an endowment mainly consisting of real estate. The fund dates back to the dissolution of the monasteries after the Westphalian Peace; monastic funds were not included in the royal demesne but were administered separately, and grants were used for the University of Göttingen, for churches, schools and charitable purposes. The outline of the fiscal year 1958 shows that 48 per cent of the net income was spent on scientific purposes.

G. D. Roth. 'Die Grundlage für eine optische Industrie in München'. Ein Werk von Joseph von Utschneider und Carl August von Steinheil. *Tradition, Zeitschrift für Firmengeschichte und Unternehmerbiographie*, V (1960), 15–38.

Using documents from the Deutsches Museum, the author examines the origin of the optic industry in Munich in the first half of the 19th century. Though the purely agricultural district of Bavaria seemed to lack all necessary prerequisites, it became an important industry of great intensity in value and export because of a high-quality production; the contributions of the economic executive Uthschneider and the scientist Steinheil are expounded in detail.

G. Franz. 'Die Entstehung des Landwarenhandels'. *Tradition, Zeitschrift für Firmengeschichte und Unternehmerbiographie*, V (1960), 65–82.

Employing different examples from all parts of Germany, Dr Franz examines the development of the trade in agricultural products in the second third of the 19th century, and follows up the process which led from the old-type of corn dealer to the produce dealer who by the introduction of artificial manure etc. had a considerable share in economic progress. The separation of corn trade and cattle trade which already existed in the Middle Ages subsisted also in the 19th century.

F. Seidenzahl. 'Eine Denkschrift David Hansemanns vom Jahre 1856'. Ein Beitrag zur Entstehungsgeschichte der deutschen Aktienbanken. *Tradition, Zeitschrift für Firmengeschichte und Unternehmerbiographie*, V (1960), 83–94.

The author publishes and comments on the 'Motiv zu dem Entwurf des Statuts der deutschen Privatbank für Baden' which Hansemann addressed in 1856 to the president of the Ministry of Finance of Baden. Apart from financial policy, Hansemann pursued yet another objective; he intended to found an issuing bank meant to be the germ for a future 'Reich'-bank in Southern Germany.

In the first 'Beiheft' of *Tradition, Zeitschrift für Firmengeschichte und Unternehmerbiographie, 1959* F. Redlich publishes under the title 'Anfänge und Entwicklung der Firmengeschichte und Unternehmerbiographie' the German translation of his work 'The Beginning and Development of German Business History' published in 1952 in the United States.

E. Maschke. 'Verfassung und soziale Kräfte in der deutschen Stadt des späten Mittelalters, vornehmlich in Oberdeutschland'. *Vierteljahrschrift für Sozial- und Wirtschaftsgeschichte*, XXXXVI (1959), 289–349; 433–476.

With abundant examples from documents of the Upper-German cities and the cities on the Rhine in the 14th century, Maschke verifies his study of the constitutional and legal position of the cities. He examines the effects of the *Zunftverfassung* and points out the necessity of distinguishing sharply between merchant gilds and craft gilds, since the representatives of the merchant gilds had a considerably larger share in the municipal administration than the craft gilds. Also in the cities with *Zunftverfassung* the patriciate had retained a stronger influence than could have been guessed from their numbers. The study shows that the new constitution, though formally a break in development, was based on continuity because of the social structure, and this continuity made possible the continuity of municipal policy. The importance of Maschke's study lies in the examination of the two interlocking factors: the nature of the constitution and social conditions.

H. Hausherr. 'Ein südpreussischer Etat von 1800/01'. *Vierteljahrschrift für Sozial- und Wirtschaftsgeschichte,*, XXXXVI (1959), 512–525.

Hausherr gives an analysis of the budget of Southern Prussia, making use of a 'Handbuch von dem Etat der Provinz Südpreussen 1800–1801' which makes possible an exact insight into revenue and expenditure. Here, as in other Prussian provinces, taxes and revenues from crown demesnes were considerably diminished because of the concessions made by the king of Prussia to the previous Polish ruler. Since the administration of Southern Prussia also functioned expensively, money for troops stationed in the country had to be furnished by the other provinces. The sources reveal only the amount of state expenditure but, regrettably, not that of private and semi-state sectors.

Heidelberg URSULA HÜLLBÜSCH

CSABA CSAPODI. 'Die Wirtschaftspolitik des österreichischen Staatsrates im Zeitalter Joseph II', *Mitteilungen des Instituts für österreichische Geschichtsforschung*, LXVII (1959), 317–327.

Csapodi examines the economic policy of this consultative body to the Emperor, making use of the documents of the Austrian Privy Council which were burnt in 1945. Its members, conforming to the views of their time, tended towards economic Liberalism and Free Trade; in view of the economic development of the monarchy, however, they favoured the realization of these ideas only within the Austrian *Erblande* (hereditary territories), whereas in foreign trade they kept to the principle of protective tariffs.

ROLF DENCKER. 'Finnlands Städte und das hansische Bürgertum (bis 1471)', *Hansische Geschichtsblätter* 77 (1959), 13–93.

The author examines the relations of the towns on the southern coast of Finland with the Hanse, which so far have hardly been dealt with. During the heyday of the Hanse, Finland was included in its East-West-trade supplying raw material· and purchasing manufactured goods. Dencker explains the manifold economic and political relations of the Finnish towns which did not belong to the Hanse with the towns on the Baltic Sea. From a thorough study of Finnish, Swedish and German sources, he establishes that the Hanseatic citizens who settled alongside the Swedes represented the leading economic class who gained a corresponding influence on the constitution as well as on the political life of the Finnish towns. As carrying traders, they found themselves in strained relations between the Hanse merchants, who had the privilege of the wholesale trade, and the Finns, for whom the retail trade and the trade in the country were reserved. The privileged position of the Germans has been considered by some Finnish scholars as an 'exploitation' of their countrymen, whereas others fully recognize their importance for the prosperity of the towns in the fields of economy and civilization.

LÁSZLÓ RÉVESZ. 'Die persönliche Abhängigkeit der Bauern in Osteuropa'. Eine Untersuchung über die soziale Lage des osteuropäischen Bauerntums im 17. und 18. Jahrhundert, mit besonderer Berücksichtigung der Verhältnisse in Ungarn. *Schweizer Beiträge zur allgemeinen Geschichte* 17 (1959), 67–152.

Taking into account the latest bibliography, the author explains how the relations between peasant and landed proprietor in Russia, Poland and Hungary deteriorated with the rise of 'Erbuntertänigkeit'. In addition to the economic burdens established in the manorial land registers came personal dependence on the lord which decisively altered the legal as well as the social position of the peasant. Hungary is the focal point of the investigation. The author refutes the thesis of Hungarian historians who maintained that links with the land were the decisive criterion for 'Erbuntertänigkeit'. He proves that in Hungary, as well as in Poland and Russia, the peasant subject to 'Erbuntertänigkeit' could be bought, sold and pawned as a person, without land; he was in fact a mere object of wealth for the nobleman in need of money. The author confirms this fact – so far denied – by numerous minutes in which purchases and sales were documented by county authorities. This administrative act authenticated a common law practised for 200 years but not confirmed in any code. It was only the abolition of 'Erbuntertänigkeit' in 1785 that put an end to this title which had been based on the *potestas dominica.*

ARTUR BERNET. 'Soziale Bestrebungen schweizerischer Arbeitgeber im 19. Jahrhundert', *Schweizerische Zeitschrift für Volkswirtschaft und Statistik* 96 (1960), 61–77.

With numerous examples, the author describes the efforts made by Swiss industrial enterprises in the 4th to the 8th decade of the previous century to improve the social position of their labourers. It becomes obvious what influence the 'gemeinnützigen Gesellschaften' – so characteristic for Switzerland – have exerted by their suggestions and proposals. How attentively these efforts were followed, and the degree to which people were impressed by the positive attitude of the Swiss workmen towards the state and the existing social system, is reflected by the fact that of the 900 subscribers to the 'Concordia' (an employers' periodical published from 1871 to 1877 in Berlin) 300 were residents of Switzerland.

Heidelberg ELISABETH FRIEDENTHAL